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Museum Rusticum et Commerciale:

O R,

SELECT PAPERS

O N

AGRICULTURE, || ARTS, AND
COMMERCE, || MANUFACTURES.

DRAWN FROM EXPERIENCE,

A N D

Communicated by GENTLEMEN engaged in
these Pursuits.

Revised and Digested by several MEMBERS of the SOCIETY for the
Encouragement of ARTS, MANUFACTURES, and COMMERCE.

VOLUME THE FIRST.

THE THIRD EDITION, CORRECTED.

Hæ tibi erunt Artes.

L O N D O N :

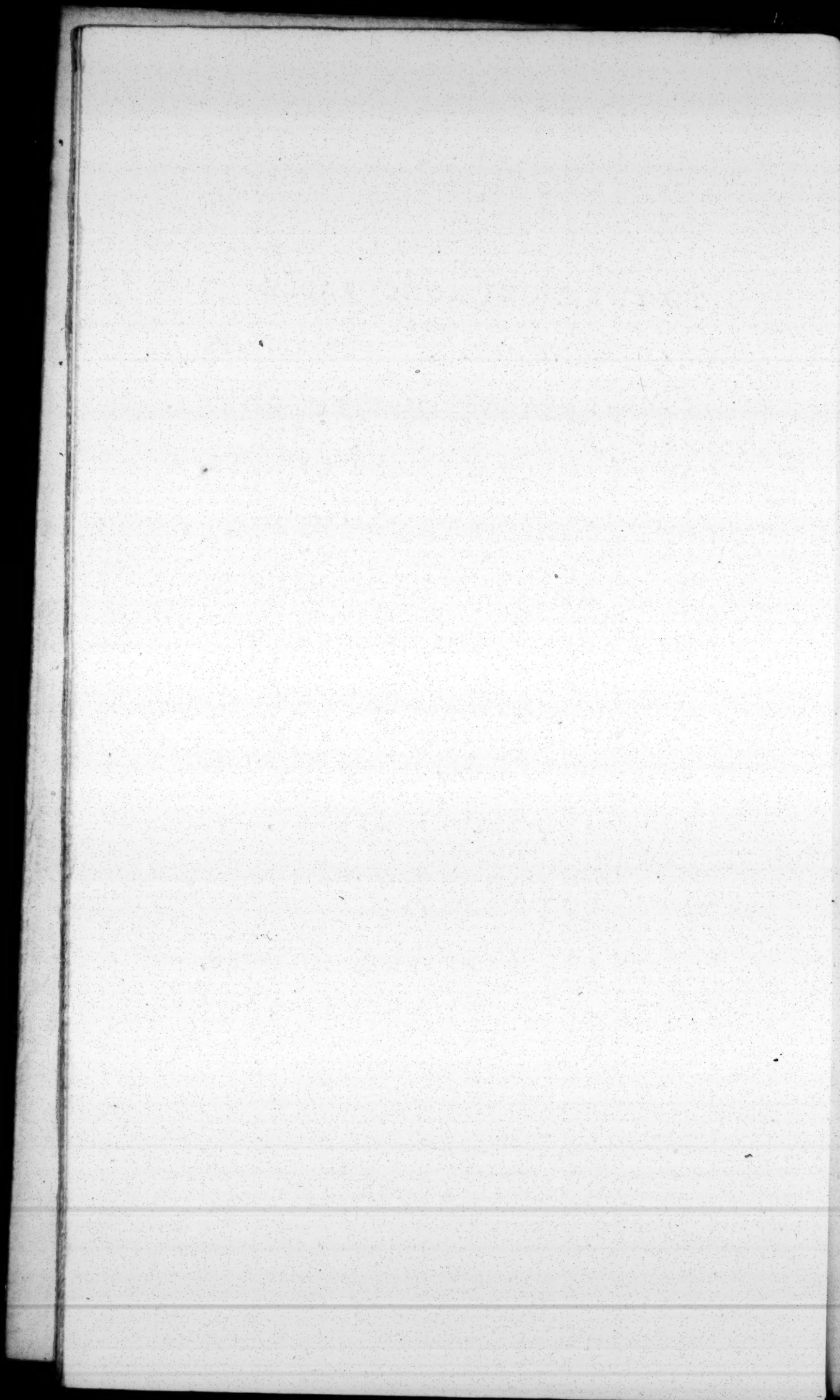
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TO THE RIGHT HONOURABLE
THE PRESIDENT AND VICE PRESIDENTS
OF THE SOCIETY INSTITUTED
FOR THE ENCOURAGEMENT OF ARTS,
MANUFACTURES, AND COMMERCE,
IN THE BRITISH DOMINIONS,
THIS SELECT COLLECTION
OF ORIGINAL PAPERS
ON AGRICULTURE, COMMERCE,
ARTS, AND MANUFACTURES,
IS ADDRESSED

BY THE EDITORS.



P R E F A C E.

LONG before the actual publication of any part of this collection, the editors were sanguine in their expectations of success; and it is with gratitude they now acknowledge their obligations to the public for the great regard paid to their undertaking; a regard which has been testified, not only by a most extensive sale of their work, but by many valuable papers on science, and letters of compliment, which they have received from gentlemen residing in the different counties of Great-Britain and Ireland, and even from some of the most learned and ingenious professors of agriculture and arts in other parts of Europe.

The public-spirited Mons. du Hamel laments that there is not in France some channel of intelligence opened, by means of which the farmers in one part of the kingdom might transmit to the other provinces their useful knowledge: if this is a desirable thing in France, where agriculture is, as it were, in a state of infantine weakness, it is certainly much more so in England, as our methods of practice are, undoubtedly, by far more rational, though still distant from the wished-for point of perfection.

We flatter ourselves, that by this publication the above purpose will be fully answered, which may be of great benefit, not to this nation only, but to mankind in general. Many ingenious gentlemen, who are able to write from their own experience, are now added to our original correspondents, and from their joint labours we have the warmest expectations. It is, however, to be lamented, that we are not permitted to disclose the names of many of our benefactors, some of whom stand so high in the learned world, that their sanction would carry into practice many excellent precepts, which have now nothing to support and recommend them, their own intrinsic merit excepted. But while we thus notice the reserve of our anonymous correspondents, we hope none will think we undervalue the great favour conferred on us by the gentlemen whose names
do

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do honour to the pages of this volume: we are truly sensible of what is due to them, and acknowledge our obligations with gratitude and respect.

In these our acknowledgements, it would be unpardonable to be silent with respect to the Society for the encouragement of Arts, Manufactures, and Commerce; of which we have the honour to be members. Many of the individuals of that truly-noble society have been already thanked in the number of our correspondents: we now address the body collectively, and particularly those worthy patriots who preside over the whole, and to whom we are obliged for their constant and impartial attention to the improvers of agriculture and arts. Without their well-directed premiums, many of the discoveries which we have transmitted to posterity would have been lost; those whom nature formed for improvements have existed in obscurity; and numberless valuable papers been buried in the rust of antiquity, or sunk in the wreck of time. From these, and other good effects already produced, it is most certain that this Society, which daily encreases in wealth, in strength, and in reputation, will be an honour to the kingdom, and a blessing to mankind.

With respect to the work itself, the judicious reader will observe, that we have for his emolument endeavoured to collect and concentrate the experience of the learned in agriculture and arts into a small compass; so that in these volumes he may know the sentiments, and see the practice, of those who are most eminently skilled in the works of nature, or most earnestly intent on the improvement of art, and may profit from the experience of others without sharing their toils, their difficulties, or disappointments.

This collection does, and will contain, not only such curious papers as have been presented to the Society, of which copies are from time to time procured from the respective writers, but also various other important articles from the most ingenious naturalists and artists in Europe and America.

Thus enriched, it cannot fail of obtaining the encouragement due to its own intrinsic merit; we say its own merit, for the Editors claim no other praise but what may naturally fall to their share, for exercising their judgment in revising the papers, and selecting such as are most likely to be of public benefit.

On the perfection of husbandry depends, in a great measure, the encrease of commerce; and as agriculture is far from being generally in a very improved state in these kingdoms,

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kingdoms, preference is given to papers written on that subject.

The use of this collection will, it is presumed, be very extensive. The nobility and gentry may gratify that curiosity so laudable in persons of their elevated rank; the artist, or manufacturer, will find many useful hints tending to improve his particular branch; and the farmer and gardener discover, treasured up in these volumes, a stock of knowledge not easily exhausted.

The intelligent and experienced reader will, perhaps, imagine, that some of the practical observations in husbandry, which he will find in this work, are already too well known to merit a place; but when he considers, that what is common in one county may be very little known in other parts of the kingdom, he must acknowledge the propriety of our conduct in this respect.

Hitherto only the utility of this work has been considered, that indeed being the principal object: yet, from the variety of subjects introduced, and the abundant matter which our volumes will contain, such rational amusement may be expected, as will enable the gentleman to spend his hours of dissipation with pleasure and profit, and produce an agreeable relaxation to those who are engaged in severer studies.

Our volumes being intended to register and preserve the discoveries and remarks that are new, curious, and valuable, in agriculture, commerce, the arts, manufactures, or sciences; all useful letters on these subjects will find a place; and whenever the intelligent husbandman, or practical gardener, is inclined to add any part of his experience to the public fund, as utility is more attended to than elegance of style, his communications will meet with a favourable reception. Hence arises that variety which has been so pleasing to the readers of these papers; hence that diversity in the manner of treating the same subjects. The opinions of correspondents may often differ, but they are seldom incongruous.

It is not to be doubted but that a publication, opened particularly for collecting and preserving papers on these important subjects, will induce gentlemen to contribute all their useful observations; which, but for such a ready repository, would be either lost, or so published as to be of little service to the community.

The Editors have, with respect to the several matters treated of in this collection, formed to themselves opinions; yet would they

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they not obtrude their opinions on the reader ; nor is it their desire to controvert the reasonings of their correspondents. They wish to be thought absolutely impartial ; and if a sentiment is now and then hazarded, by way of illustrating what may to them seem obscure, as they lay no claim to infallibility, they would be glad to stand corrected. Neither do they take upon them to defend the doctrines of others : the work is miscellaneous, not systematical : and should any reasonings be advanced, which may have the appearance of art, or not be conclusive, they will with chearfulness give place to a dispassionate refutation.

We have only to add, that having already experienced the great encouragement an impartial public is capable of affording, we presume to hope for a continuance of that favour, without which our work cannot subsist : it is almost unnecessary to say, we mean an extensive correspondence with the intelligent, ingenious, and experienced members of society.

The capital letters annexed to the notes refer to the respective editors who added them on perusing the pieces.



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Museum Rusticum, &c.

For SEPTEMBER, 1763.

The THIRD EDITION, revised and corrected by the Editors.

NUMBER I.

A Letter from C. W. Esq; Member of the Society for the Encouragement of Arts, Manufactures, and Commerce, to the Editors, describing the Kentish Method of gathering and curing Hops.

GENTLEMEN,

AS you invite all correspondents on these useful branches of husbandry and gardening, I the more willingly take pen in hand, in hopes to induce others to communicate their knowledge of facts, that the ignorant may thereby receive instruction, and the whole community improvement.

The article I shall enlarge upon is the gathering and curing of hops, which I have not yet seen thoroughly and truly described in print. I shall omit the planting, because I suppose many conversant therein; or, if required, it may be inserted in some future letter *. And as the methods are

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B

various,

* As we think the Kentish method of planting hops to be at least equal to any practised in England, the editors would esteem it as a particular obligation conferred on them, if the member, who favoured them with this letter, will send them a description of the method of planting and managing a hop-garden, as now in use in Kent. We should esteem it as a very particular favour, if any of our intelligent Kentish correspondents would comply with the above request. E.

various, in different parts of the kingdom, of picking and drying, I propose to set forth what is practised in our county; not being restrained with that partial and selfish view of keeping all knowledge to ourselves, and hiding our candle under a bushel.

The time when the hops are chiefly ripe is about the latter end of August, or the beginning of September; at which season swarms of poor people travel from their homes to assist in the getting in that harvest; for whose reception commodious thatched houses or barns are provided by the planter.

It is adviseable to have a forward fort to begin upon, to keep the hop-pickers employed till the others are fit to gather; and when hops are once ripe, there cannot be too much expedition used in picking them, they are so subject to be spoiled by rains, wind, and frost, which usually happen at that time of the year: though, on the other hand, if you should set off so many pickers as may soon finish the garden, it will be so little profit to each, that they will not only make a murmuring, but on a future year they will not work for you*; and I have known many persons obliged to be at a considerable expence to entice hoppers, when there has been a scarcity of hands.

The usual way is to pick by the bushel, at a penny, three-half-pence, or two-pence, varying according to their hanging easy or fair to gather, or otherwise, and according to the quantity. And that there may be an equality of gain to each, the hoppers themselves associate in sets of such as they know are good hands, which are called *binns*, and consist of six *pickers*, and a person to pull poles, who is termed the *binn-man*†: and these are arranged three on each side their *binn*, which

* This gentleman observes, that when the hops are ripe, too much expedition cannot be used in picking them, on account of the accidents to which they are subject: and he adds, that if there are too many pickers, the profit to each would be but trifling. It seems difficult for the planter to manage this matter properly, so as to get in his crop in good order, without disgusting his pickers. Emulation and a desire of gain do great matters: we would therefore recommend it to the planters, to give a premium every day to that binn which picks most hops within the hours allotted for work, as we imagine by this means his harvest would be greatly forwarded, without his being under a necessity of over-stocking the garden with pickers, &c. O.

† In Essex, where there are many hops, this man is called the *Lord*. E.

which is an oblong wooden frame, with a cloth tacked round the edges, and hanging down as a large bag open on one of its sides. At each end of the said frame there is a piece of wood, erect, with a notch in it, in which notch lies the end of a pole, the length way of the frame; and against that, on each side the binn, the man lays the poles, as he raises them out of the ground, for the pickers to pull the hops off from them.

The *overseer* of a ground is to take particular care that the hops be picked as clear from sprigs and leaves as well may be: and when the *binns* are full, the *overseer* goes round with his bushel-basket, and *tallies* to score upon, and measures and shoots them into a kind of long sack, called a *poke*: these *pokes* are, when full, tied at the end with an hop-bind, and carried in a cart or waggon, or by some other manner of conveyance, to the *ouft-house*, where the hops are to be dried.

This leading to the description of the *ouft*, it is built with fire-places in the nature of malt-kilns; and at a proper distance over the fire is an hair-cloth strained upon laths; and thereon the hops are laid, and raked even to the depth of about six or seven inches, for the better conveniency of drying them equally; and when they are properly cured on the under side, they are carefully turned; and by that means the upper side becoming the under, the whole shares the fire alike. The person that performs this part is called the *dryer*, whose business it is to manage the fires.

The fuel commonly made use of is cha coal, for its freedom from smoke, and affording a steady heat. Great nicety is required in this part; a small fire being to be made, at first, that they may heat gradually, and so raised as they dry, that it may be done without scorching; and the fire is to be lowered by degrees, against they are ready to be taken off: the time required is about eight hours.

But as charcoal is of great price, being three or four pounds *per* load, many people have got into the way of drying with sea-coal upon *cockle-oufts**, which are square iron boxes placed

B 2

upon

* A person has lately claimed the merit of having invented a new method of drying hops with sea-coal, or any kind of fuel whatever, by means of a moveable iron furnace: it is in form of a horizontal cylinder, stopped at both ends: it lies on an iron carriage

upon brick-work, and a flue and chimney in the back part of the building for the smoke to go off. The computation is, that a chaldron of sea-coal, at about twenty-four shillings, will dry a load of hops, and that a load of charcoal will do no more. 'Tis indeed expensive to erect such *oufts*, as there must be no timber near them; and an iron beam and iron laths are to be used, and they covered with plates of tin or iron properly fastened together.

When the hops are thus dried, they are shovelled off into the chamber, where they lie till cool, and, as it is termed, *the fire gone out of them*: they are then bagged, which is done in a long sack of coarse or fine hop-bagging, according to their quality; the open end of which is fastened to a round hoop, and put into an hole cut in the upper floor; and a man goes down into it as it is hanging: the hops are shovelled in upon him by little and little, and he treads them under him with his feet, the closer the better: he is called the *bagger*. The weight of a bag should be two hundred and an half, and of a pocket in fine cloth, one hundred and a quarter.

After they are thus bagged, of which the exciseman is to have proper notice, they are weighed by him and marked, and the duty of one penny a pound charged thereon: a very heavy article upon so expensive and uncertain a commodity! I have thus gone through the several parts I promised, and shall, upon other opportunities, be glad to send you any remarks on such subjects as may occur*. I am,

Kent,

GENTLEMEN,

Sept. 1763.

Your humble servant,

C. W.

carriage, which rolls on four iron wheels: in the fore-end of the cylinder is the furnace door, and a hollow iron flue runs in an horizontal direction along the upper surface of the cylinder from the back till it reaches the fore-end of it, when it takes a vertical direction, and is carried as high as is necessary to convey the smoke out of the *ouft*. We cannot pretend to say what are the particular advantages resulting from the use of this rolling furnace, never having seen it at work. N.

* If any of our correspondents would give us their thoughts on the blight in hops, to which they are much subject, it would be greatly obliging many of our readers. E.

NUMBER II.

* *A Letter from Mr. John Irwin, to ————, Esq; on the Culture of Flax in the Mahera, a District of the County of Roscommon in Ireland.*

DEAR SIR,

BEING very sensible of your great desire to promote the public good, I can no longer resist the promise I made you, of putting together some of the common practical methods of our Irish husbandry, in use in that part of the kingdom where I hold land, and which, by repeated trials, have come within the course of my own knowledge; so that (very unlike many others who treat of husbandry) I shall speak from facts, not from conjectural theory.

I will make no apology to you for our awkward, and in many respects imperfect, manner of farming in Ireland: we are yet but in the infancy of shaking off our old prejudices; however, we have a great desire to improve, and are accordingly getting forward apace; so that before the end of this century, if no domestic troubles happen, the external cultivated appearance of this country will be little different from that of England. If, therefore, we are not good farmers, we soon shall be; which circumstance, with a person of your considerate cast, will, I doubt not, sufficiently apologize for our not being, at this late day, since our first connexions with your countrymen, so little versed in this most important of all occupations in human life.

I live about six miles from Roscommon town, in a fine open champaign country, the soil for some miles round being mostly of a deep clayey nature, moist in winter, and stiff in summer, and lastingly fertile, that part especially of the barony I live in immediately about me: so that, had the
farmer,

* This letter was communicated to the editors by the gentleman to whom it was addressed: we cannot omit this opportunity of thanking him for his kind encouragement. If Mr. Irwin will favour us with some practical remarks on the subject of agriculture, he will oblige us much.

farmer, in skill, been equal to the fertility of the soil, it might justly emulate with any part of Kent, or Middlesex.

The middle price or rent of land in this country, to the farmers, or rather graziers, (for such they mostly are in that district, and too much so all over the kingdom*) is from ten shillings to twelve shillings, and of late years to fifteen shillings *per acre*; but at this last price there is no fortune to be made, till the kingdom either increases in its trade, which will establish markets equal to Dublin in different parts of it, (a circumstance of the utmost importance to the farmer) or until the inland navigation is completed; and, to the shame of the country, I find there is a stop put to it for this year, though a parliamentary work.

Having said thus much of the soil, which was necessary to premise, in order the better to explore its produce, I shall now proceed to the cultivation of flax, as practised in this part of the country, being as yet the principal article that brings into Ireland most of the wealth it possesses, though it ought, in common with other nations, to benefit equally of every other commodity it is capable of producing. But, alas! such are the unhappy effects of human policy, that being restrained in point of general commerce, which alone is the vivifying sun that makes a country yield to its utmost, three parts of us are on this account driven to the hard necessity of becoming emigrants; *Nos patriam fugimus, et dulcia linquimus arva*. But to return, the Dublin society, and many others, have treated this subject so much at large in their essays, and justly so, because of its great importance
to

* To the great misfortune of Ireland, most of the land is let in large farms to powerful undertakers; it being no unusual thing there, for one man to hold two thousand acres of land. The chief part of this, these monopolizers lay down in grass for feeding cattle, by that means depopulating the country, and starving the poor. Were these large farms divided, and more land brought into tillage, the face of the country would assume a different appearance, and the poor inhabitants, instead of being driven by want into foreign countries, would be glad to stay at home, and apply themselves to the different works of husbandry. O.

to the kingdom, that it will be needless for me to say much about it, except where particular methods of cultivation and management of it may differ in particular cantons, such as about my place, from the general methods recommended by public authority, and be of use in being communicated.

Of the Cultivation and Management of Flax in the Mahera.

The poorer sort of people in the district I live in, are so indigent, that they are almost in a state of slavery. Indeed, within these last forty years, they have much recovered from their bare and naked condition, owing in a great measure to the considerable extension of the linen manufacture.

Their chief riches consist in their annual crops of flax, corn, and potatoes, in order to pay their rents, which they help off with day-labour; a most galling article to them; for, as to cattle, few of them have any, or but a milch-cow or two at most, which are appropriated for nourishing generally a numerous issue. The calves, which industry ought to be let remain with them to increase their funds, or to clothe their families, a rapacious landlord seldom wants a pretence of appropriating to himself. These people then, from necessity, it is evident, must be perfectly versed in the cultivation of flax and potatoes; and they would succeed very well as to corn, had they surmounted a few old prejudices respecting the form or make of their implements, and the methods of using them. It is however from ocular knowledge of their proceedings, in my work and their own, that what I now communicate to you is founded.

The soil about Oran, being strong, deep, and moist, with a clayey loam mostly at bottom, yields excellent flax. It is here scarcely ever produced immediately from the ley. The general practice is as follows: a parcel of ley land in good heart, that is, which has not been plowed for many years, is proclaimed to be set to grass potatoes (otherwise spaddane, a very mistaken practice, especially if a deep soil, if it be not sanded, or if a light, if not marled, or limed, or otherwise manured): for this land the poor are charged from
three

three pounds to five pounds *per acre*, sanding not always included; a most unconscionable price!

They generally bargain for two successive crops; and it is for their benefit, as also for that of the land, to have it sanded, because it strengthens it the better to stand a continuation of tillage, and to come the sooner to turf, and yield a good coat of grass, when let back into the ley; but the sky-farmers (those who hold at rack-rents) are mostly so greedy for gain, that it is with reluctance they agree to sanding, as it abates fourteen shillings *per acre* of their price. When land that requires it is not sanded previous to this kind of tillage, it is doing it great prejudice; but farmers are not always solicitous about this matter, especially on short leases.

Land properly set in this way ought to be sanded* at least a year before setting, that it might have proper time to penetrate into the earth, and impregnate it with its salts; but they are such bad farmers about me, that they set, sand, and plant their potatoes almost at the same time. Even in this bad way the land should be set and sanded (or otherwise manured) at least in November, and the potatoes planted the March following at farthest: but I have seen land not sanded till March or April, and not sowed till towards the end of May, (a palpable blunder;) yet this land has yielded a tolerable crop, owing to its great natural fertility; for the sand becomes of little use, if the land is turned up soon after it is fresh laid on. This does much hurt in the country; for such land, after it is let out from a long series of tillage, (suppose fifteen years) is a long time recovering itself, and that which is spaddanized out of the ley, and not gravelled at all, unless of a most superior rich kind, is doubly injured.

The

* We could have wished Mr. Irwin had specified the particular quantity of sand he lays on an acre, and whether it is found in his land under the first bed of soil, and at what depth; also the nature of the sand that agrees best with the land, whether it consists of fragments of lime stone, which gives a richness and vigour to the soil, or of flints, or pebbles, which serve only to divide and loosen a soil that is too close and compact. N.

The potatoes should be dug towards the end of October, or beginning of November at farthest, (frothy weather excepted) to make room for a crop of bere*, or a crop of flax, the spring following; if for flax, the land should get a deep plowing before Christmas, to benefit of the winter manure, such as frost, snow, air, &c. and a cross plowing the beginning of February; and towards the end of March it ought to get another plowing in the track of the first; then the ridges to be harrowed down as fine, and as flat, as possible, and the seed sown in, and lightly covered with another gentle harrowing; for the seed is not apt, from any cause that I have observed, to be disturbed in the ground.

In this situation it should be left till June, then weeded. Some weed it when four or five inches high; but treading it so young hurts it; and this weeding is of no use, for it must be weeded again before pulling, especially in deep chiltern countries, where weeds get a-head much more than in light gravelly soils. In these the flax is always shorter and finer, and the seed in less quantity; but the Irish seed, though it is often imposed for foreign, is never so good: for example, the first year's return of foreign seed will produce a middling good sort of flax, whereas the second return will not. To sow the seed even should be most carefully attended to: a commonly skilful hand will with ease cast it properly, the method being so well known. Sixteen pecks of seed, at twelve quarts to each peck, is a proper quantity for an acre of good light soil. In my deep grounds I have known fourteen pecks to be sufficient.

The seed now much used in Ireland is the Plantation, but the better sort of the Baltic or Riga seed I would prefer. The Dutch agrees worst of all with our climate. The choice of it is easily known. The women are surprisingly skilful in every thing that regards this plant: one of them will shut her eyes, put her hand into several hogheads of

NUMB. I.

C

flax-

* Bere is a kind of barley, little known in some parts of England: it is often called winter or square barley, or big, and is the *Hordeum hexastichum pulchrum*: J. B. It is sown in autumn, and on well-tilled land yields a large increase; it is coarser than common English barley. T.

flax-seed, and fix upon that which is best; but they have marks from pressing it to oil between their fingers, so as to observe the edges, and from taste, smell, and view, without requiring to make the other common experiments; whence they are seldom deceived; not but the merchants play them a thousand tricks in this article, which is become very lucrative of late years, from the vast demands there are for it.

The heavy, pale redish, or rather clear brown looking seed, being thick and short, and oily in the feel, is the best. Sometimes, among some parcels of the seed, there are certain mixtures, by which predications the women immediately estimate the quality of it. The old Irish seed, of which quantities are still sown, is the worst of all; the returns are extremely bad, and the flax but indifferent for use.

Two crops successively are common in deep rich lands; but as flax is a great drawer, they are not the better for it, as it greatly retards their coming to grass.

We always sow flax after potatoes or corn, (bere) and, if proper care be taken in the preparation of the land, find it to answer well. How far better it may be immediately out of fresh land manured, I will not take upon me to say: some writers recommend this method; but it would never answer with our poor people. I have seldom known flax to be raised immediately from manured grounds: mine being rich, deep, and moist, and properly wrought to return a first crop of some other article, yields afterwards admirable flax. Where different soils can be had in the same district, it is needless to observe, that the richest and strongest, with a clayey loam at bottom, is best: the nature of this plant requires such, being a great drawer of the nutritive parts of the earth; but, on the other hand, there is a medium to be followed in this, as in most other things: land may be made too rich for flax, which will undoubtedly lodge it, that is, occasion its prematurely lying flat to the ground: this prevents its ripening, consequently occasions great waste of it, total loss of seed, and what is recovered of it manufactures but indifferently, and stands the tests of use worse: however, there is much of this sort spun into yarn by the

poor, and imposed for good on the eagle-sighted yarn-buyer, notwithstanding his great vigilance.

If middling good land, whether in the ley or not, be fallowed early in the summer, and gets the proper tilth till the March following, when it is to be sown, there is no doubt but it will yield an excellent and abundant crop of flax. Land cannot be plowed too often, or made too fine, for this purpose. Flax ought to be sown and pulled in dry weather.

It is ripe in my neighbourhood, generally speaking, not till the beginning or middle of August, and sometimes later, when late sown: the better sort of husbandmen think it is not necessary to sow it earlier than Good-Friday: about that time most people begin.

The poor people have several marks by which they know when it is fit for pulling: the degree of brownness of the colour is the chief, and is a sufficient guide to any person. The men and women, promiscuously ranged in a row abreast, pull it expeditiously enough, especially if they are a little refreshed with some of the good things of this life, and lay it on the swarth. If there be danger of rain, they bind it the same evening into sheaves, and *stook* it, putting commonly eight sheaves in every *stook*. Here it is suffered to remain for some days, till it is sufficiently dry to remove.

The poor, from necessity, proceed to manufacture it immediately, by *ripling* of the rows, and *watering* it, &c. But my method is as follows. After I let my flax sufficiently season in the field, so as to prevent danger of heating, which destroys it, I draw it into my haggard, stack it, and thatch it well. Thus I let it remain till the next sowing-time, (March) when I *ripple* it and *water* it, and, if I have leisure, proceed to *dress* it; if not, make it back into a stack, and let it lie so, without any hazard of danger, as long as convenient: or, (another way) soon after pulling, it may be *rippled*, *watered*, and *stacked*, so as to be ready for dressing the spring following. But I chuse the former method, because I thereby preserve the seed, and sell it, if I take a little care, equal to the foreign, which will go a good way in reimbursing me my expence: it is true, the quantity of flax will

will be somewhat diminished for remaining so long unwatered; but then it makes ample amends in meliorating it; for I have observed, that the flax thus managed dresses and manufactures much better, and when in linen, it wears best. But the impatience of our Irish ladies, who are the conductors of this branch, from the time the flax is over ground, till made into linen, is such, that they do not relish delays of this sort, though infinitely the best method of proceeding.

For watering flax, clear stagnated pools or canals, or ponds, are best, provided there are no fish, as it kills them: springs and running waters must be avoided. To sink it under water is proper, and let it lie about three weeks, more or less, according to the quality of the flax, and the condition of it at putting in.

About me the poor people still perversely will water it in bog-holes, because they think the water cannot be too soft, and that the banks, being unincumbered with long grass, facilitate the drying of it.

When it is brought home (as they have no ovens) they fix a large hurdle horizontally by a ditch side, about four or five feet from the ground: on this they lay a parcel of flax, and underneath make a large turf fire, and keep constantly turning it.

They judge it fit for the *brake*, by rubbing a parcel between their hands, and finding the prickles to detach themselves easily from the flax.

The *braking* is a very laborious part: it is pity that about where I live there are no engines contrived for this purpose, as it would save great expence in labour. This part of the process ought, properly speaking, to fall solely to the share of the men; but the women as commonly do it, which I think very unseemly, and still more so to see a man *scutching* and *backling* flax, which is equally as common with us: but the women always *scutch* mine, and I find do it best, as I order them refreshment, it being a merry-making time, (though but short) like vintage, or sheep-shearing time.

The construction of the *brakers* I need not explain; they are simple engines, and known to every body. The broad

scutch

scutch is the best, as it hurts the flax less; it ought to be made of well-seasoned oak, to be light, that the women, who are dexterous at it, may manage it the more easily.

A great deal depends on the skill of the *hackler*, who ought to be very expert and knowing in dividing it properly, and in arranging the forts according to their different fineness. I have had some *hacklers* manage this matter so well, that out of the very tow they produced I had good linen for common use*. I had other *hacklers*, who, instead of preparing my flax to spin to eight and ten dozen of yarn to the pound, of which it was capable, prepared it so badly as to produce me only from four to six dozen yarn.

To the spinners we keep in our houses we generally give from thirty-five to forty shillings a year: these spin from four to eight dozen yarn; but if they spin finer, they are entitled to get a gratuity in addition, or higher wages. There are girls in plenty in the north of Ireland, (where the manufacture most flourishes) who spin surprisingly fine, and many of them with both hands at once, at wheels adapted for the purpose; but scarcely any of these ever come into the parts where I live.

As to the rest, from the time the yarn is sent to the weaver till it is brought home from the bleach fit for use, it forms a particular process in itself, and shall be communicated to you when more ample leisure will permit. However, before I dismiss this subject, it may not be improper to make a few detached observations to illustrate still more what I have already said.

There are various ways to know good seed, which is one of our most essential objects. First, to discover its thickness, by taking some grains, and squeezing them between the fingers until the white edges of the inside pulp, or grain, are

* In Ireland almost every family in the country manufactures all the household linen, such as table linen, sheeting, &c. &c. It is therefore no wonder the ladies should so well understand the process of managing the flax from the time it is pulled till it is fit to be made up into shirts, shifts, &c. We wish Mr. I. had mentioned what was the quality of the linen that was made from tow, and to what uses it was applied. A.

are forced to appear. To estimate its goodness by its weight may be easily done by throwing a handful into water, and if good, it will sink quickly. To prove if it be oily, throw a handful on the fire, and if, as soon as it touches the coals, it burns up and crackles, its goodness may be depended on. But no seed of Irish growth, as I said before, will thrive well a second year in any of the soils in my neighbourhood; nor will the same soil answer for more than two successive seasons, without the intermediate occupation of other crops procured from manures.

As the culture of flax lays down land very smoothly, and well, if you chuse to have your land let out, you may sow grass-seeds with a light roller, or busk, in some little time after your flax is in the ground: they will not hurt it; and by this means you will have a full coat of grass the same season, which otherwise perhaps would not be the case for two or three seasons, flax being a great impoverisher.

When the flax is a clear yellow, or a clear brown, something resembling a lemon colour, and begins to drop its leaves, it should be pulled; but never when it is green, though often done, which is a very destructive method, for in this case it loses considerably in quantity and quality, both with respect to flax and seed. Those who imagine pulling it green will make it yield the finer linen are mistaken: they need only consult the method of the Flemmings, who suffer it to remain the longer in ground, the finer they want it to prove for their laces, cambricks, &c. Care however should be taken not to let it remain too long in ground, as this makes it work badly, yield bad yarn, and not bleach so well.

I have kept my flax in stack in my haggard some two or three seasons, and never found it was damaged by vermin, though I know there are preventatives laid down, by some writers, for this purpose.

If the season be moist, there is no stacking it with safety till it remains unheaped a considerable time in the barn, as the least heating is certain destruction to it.

No land can be too good for flax, if the seed be duly proportioned to it. If the crop fails in a rich and strong soil,
it

it has had too much seed; whereas it is not to be so thick, but that every stem may have the benefit of the sun, and the air to fortify it. I shall say nothing further of the different kinds of soil proper for flax, having drawn my experience from that mostly in my neighbourhood; the qualities of which I have already noticed. In short, such as these hints are, accept them; and if through your means they should in any sort become useful to the public, I shall consider myself sufficiently rewarded. I am, SIR,

With great esteem,
Your very obedient servant,

June 24, 1763.

JOHN IRWIN.

P. S. Flax is subject to be blasted, or withered, by intense north winds, or N. E. winds, which never fail blowing in Ireland at different times in the summer season. I have observed the odd effects of these blasts on fields of my own flax: they sometimes darted through in an irregular direction (like a thunder-bolt) from N. to S. or from N. E. to S. W. blasting some yards wide, but not equally so, which was soon perceived by the different colour (foxy) of the blasted part. At other times the flax appeared blasted in pretty much a straight line from end to end, and nearly of the same width. The flax thus burned up (as I may say) by these northern winds, is good for nothing, and the prevention of it is impossible*.

This same cause, I have observed, is also most destructive of orchards: it has been of mine, though exceeding well sheltered. I burned some litter and haulm the windward side, while the blast lasted (about the end of May); but cannot take upon me to say my fruit-trees benefited much by this experiment, recommended by some writers on husbandry.

* Though in the first edition we omitted it, we must not now neglect requesting some of our correspondents to give the public their thoughts on the nature, cause, and effects of this extraordinary blast, with which the wind above mentioned is impregnated: we might perhaps by this be led to a remedy. N. — A gentleman has, since the publication of the second edition, observed to us, that it would be of service if elm-trees were planted in a hedge-row, on the N. E. by way of shelter to land sown frequently with flax seed, and exposed to this blast. E.

NUMBER III.

A Letter to Mr. R. Davis, on Trees and Shrubs which will thrive near the Sea.

S I R,

AS my habitation is in the eastern part of this kingdom, and within a cable's length of the main ocean, I have cultivated such trees only as I have found, from their contiguity to the sea, able to resist not only the violence of all winds, and salt spray, but even the brackishness of the soil. The town of Harwich, for instance, is almost surrounded by the sea, and the pump-water in it is too salt for common uses; and yet in no part of England do mulberry-trees * bear more or better fruit, nor produce a healthier leaf. I do not recollect to have ever seen a mulberry-tree injured by the east winds, that grew near the sea.

Roses also are fond of a brackish soil, and will grow and flourish even to the water's edge: but what has surprised and baffled me most, is the frequent failure of Scotch firs, (a tree so remarkable for its hardiness). These trees seldom succeeded with me; and I at first considered their failure to arise from the plant, the soil, or the sea-air; but I find it quite

* Rosemary will thrive very well near the sea, and grow to a great height. Fennel also prospers surprisingly very near salt-water. In the island of Thanet, fennel forms, near the sea, hedges of near a mile in length, growing wild there. The rosemary plant forms a beautiful hedge when properly kept in order; and even fennel is not to be rejected in gardens, so situated as that few plants will prosper in them. Several species of the *limonium* (and these are naturalized to the sea) will grow in our climate; some may be propagated by the root, others by the seed; their culture is not very difficult; they love in general an eastern aspect, and a loamy soil: they are often admitted into gardens for the sake of variety, therefore should by no means be rejected in a garden situated near the sea. We shall only mention one more at present, which will prosper well only near the sea, and makes a pretty figure in a garden: it is the *eryngium foliis radicalibus ovalibus planis crenatis, capitulis pedunculatis*, Hort. Cliff. This species of eryngo is very easily cultivated from the seed, requiring but little care: it flowers in July. H.

quite otherwise, and that their death is owing to neither, but to a small *animalcula* * that nestles in and about the buds; for by destroying these *animalculæ*, a tree that was half dead has, in a short time after, recovered its full vigour.

By these *animalculæ* every planter of firs will lose a great many, if they are not attended to. The firs in Lord Holland's plantation, near the Acton road, are many of them dead: I examined three or four, and found they had been destroyed as above mentioned.

As I have but very few fir-trees, they have been cleared from these little destroyers by hand: but I imagine brimstone burnt near each tree, in the beginning of April, would do the business more effectually and expeditiously in large plantations. Though I say the beginning of April, it is not because I am certain it is at that time of the year the egg of the *animalcula* is deposited, for of this I am quite ignorant; it may therefore be necessary to repeat the brimstone till the particular time in which the deposit is made, can be ascertained by some nicer observations than I have hitherto had leisure to make.

Felxtow Cottage,

June 22, 1763.

To Mr. Robt. Davis, Bookseller,
in Piccadilly, for the Museum
Rusticum.

I am, SIR,

Yours, &c.

NUMBER IV.

A Letter to one of the Editors, containing Observations on the new Method of mowing Corn, invented by Mons. de l'Isle.

S I R,

I Received your favour, in which you recommend me to try to mow my wheat after the manner invented by M. de l'Isle: it came however to my hands too late for me
Vol. I. No. 1. D to

* We could wish this gentleman had described the nature of the *animalcula* he mentions to infest fir-trees: could its changes have been observed, the gardeners would have been better enabled
to

to make the experiment, as my wheat was almost all down at the time. You require my opinion on the subject: this I can give you, though not with so much pleasure to myself as I could if I had made the trial. In reading the description of the manner in which this operation is performed, I find that the corn is cut very near the ground; that the work is quicker performed, and with fewer hands.

It is certainly of advantage to cut the corn as close to the ground as possible, as by that means we encrease our quantity of manure*: some may perhaps say, that if it was necessary, it might as well be done by the sickle; but this I deny, as no labourers could support the toil of reaping, were they obliged to stoop so low. You may already perceive I prefer mowing the wheat to reaping it, if it can be brought into practice. Some farmers are fond of cutting their wheat as short as possible, alledging that it takes up less room in the barn; but this is very bad management, unless it is near great towns where they are in no danger of wanting a sufficient quantity of manure.

My greatest doubt arises from the difficulty of bringing this method into practice, as it differs so widely from the manner in which they mow barley and oats. This difficulty, however, may, I am apt to think, be got over; for it is

no

to guard against its ravages. We recommend it to the curious, to try whether fumigating the trees with brimstone will destroy this insect, and if it proves effectual, to observe when is the best time of doing it. E.

* When wheat is cut close to the ground, the quantity of straw, housed with the ear, must of course be greatly encreased. Wheat straw is seldom given to cattle as fodder: therefore, as soon as the wheat is threshed, the straw is generally, in many parts of England, laid thick about the farm-yard; and when it is thoroughly wet, and begins to rot, it is shovelled up in a heap, and carried to the dunghill or muck-heap, other parcels of fresh straw being laid in the yard in its stead: where this is the practice, it may certainly with truth be said, The more straw, the more dung. It is true, that in the isle of Thanet, and some parts of Kent, they leave their stubbles very long, as the sheaves are by that means shorter, and take up less room in the barn: but their reason for being thus negligent of their straw is, because they have a much better manure near at hand; that is, sea-waure, of which they lay great quantities on their land. R.

no unusual thing in my neighbourhood to mow the wheat stubbles after harvest, to burn in malt-kilns; and they think, not without reason, that this does rather good than hurt to the land; for the dry stubble, not being apt to ferment, is a great while before it rots in the land; it keeps the land hollow, grows mouldy, and, some think, often occasions the following crop to be smutty*.

This method of mowing stubble †, which is every year practised, almost convinces me, that our workmen might be brought to prefer mowing wheat to reaping it: the work is, in fact, less laborious, and less trying to the health and constitution.

M. de l'Isle's method of mowing his wheat is, I find, as follows: the scythe he uses is at least six inches shorter in the blade than the common scythe, and instead of a cradle has two twigs of osier put semicircular-wise into holes made in the handle of the scythe, near the blade, in such a manner, that one semicircle intersects the other: this method is frequently practised by the men who mow our meadows, as they think a cradle unnecessary and cumbersome, unless the scythe is to carry over a large and very heavy swarth.

In mowing barley, or oats, the corn is always on the right hand of the workman: but by M. de l'Isle's method

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of

* Another great disadvantage proceeding from the unrotted straw being mixed with the soil is, that when wheat happens to be sown on such land, the stiff stubble or straw, suppose of bears or barley, keeps the land hollow, and prevents the earth from touching the seed, which is thereby exposed to the severity of the winter frosts, and seldom produces a plant: it is on this account that farmers, who in the common method of husbandry sow a large quantity of seed on their land, in the spring see the wheat-plants very thin and scattered: they often falsely attribute it either to the badness of their seed-wheat, or to the ravages of birds and insects; whereas the true cause should be sought for in their own slovenly husbandry. In some counties in England, and in most parts of Ireland, they reap and bind all their corn, barley, and oats; by which means the land is never free from unrotted straw or stubble. N.

† The Kentish farmers also frequently mow their stubbles for the same purpose of drying malt; and this is the more necessary in that county, as they frequently leave their stubbles very long, having a custom of cutting their sheaves as short as possible to save barn room. R.

of mowing wheat the corn is at his left hand : he mows it inward, bearing the corn he cuts on his scythe, till it comes to that which is standing, against which it gently leans. After every mower follows a gatherer, which may be a lad of twelve or fourteen years of age, or a woman. The gatherer keeps within five or six feet of the mower, and being provided either with a hook or stick about two feet long, gathers up the corn, makes it into a gavel, and lays it gently on the ground: this must be done with spirit, as another mower immediately follows; for to every mower there is a particular gatherer.

To do this work properly, the mower should form but one track with his feet, advancing in a posture nearly as if he was going to fence, one foot chasing the other. In this manner the standing corn is mowed; but the workman must take care to have the wind at his left, as it bears the corn towards the scythe, and causes it to be cut nearer the ground. If the wind is behind the mower, it is no great inconvenience: it only occasions the scattering of a few ears; and the cut corn, which should lean against the standing corn, is sometimes thrown down; which makes the work go on slower, and encreases the gleanings. The wind in front is very bad; the corn cannot be cut close, and there is a great loss: but the wind on the right hand is worst of all; the stubble is left long, and such a quantity of gleanings, that one would imagine no crop had been taken off. When wheat is bent, the workman takes the corn as it presents itself to him, which has the same effect as if the wind was at his left side. When wheat is laid, it is more troublesome to the gatherer, because the cut corn is apt to be mixed with that which is standing; but a good mower takes the advantage of the wind, and cuts it against the way it is laid. No particular directions can be given for corn that is lodged and tangled, unless it is to take it as it is inclined, as if the wind was in the back of the mower.

Thus far my author; I am very sensible that wheat may with advantage be mowed; but I see no very particular reason for preferring M. de l'Isle's method. This mowing the wheat towards the standing corn seems intended to prevent the

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the ears receiving the shock of falling to the ground, especially as the stubble will not be left long enough to break the fall: but I should imagine some method might be found, by means of a well-contrived cradle, to make the scythe lay the cut corn gently down without a shock on the ground: if this could be done, the work of the gatherer might be saved, which would greatly lessen the expence of harvest, and induce people much sooner to come into mowing their wheat.

Every innovation in husbandry should be as simple as possible; for though the farmer may be intelligent, four parts in five of his workmen will always be stupid, ignorant, and obstinate: yet are these necessary instruments to carry into execution every work of husbandry. I have myself for some years thought, that wheat might better be mowed than reaped; but what hindered me from making the experiment, was my being conscious that it would be necessary, as well to find out a method of mowing wheat that grows on high ridges, as that which grows on fitches and flat lands: this was the difficulty that occurred; this prevented my carrying my thought into execution; and this I even now think is not easily to be got over.

If you hear of any body that has tried M. de l'Isle's method of mowing wheat this harvest, I should be glad to be informed what success they have had; it may perhaps be brought to bear with very little improvement. I much approve of his method of laying the gavels, to prevent the corn from growing in the ears: he lays them in triangles, so that the foot of one gavel forms a bolster for the head of another*; this keeps the ears from the ground, and prevents their imbibing its moisture.

M. de l'Isle imagines one advantage of his method to consist in a great encrease of fodder for the cattle, by the number

* The manner of doing it is thus. After the first gavel is laid on the ground, the ears of the second are laid on the foot-stalks, or straw of it: the workman then takes a third gavel, the ears of which he lays on the foot of the second, and gently raising the ears of the first gavel, he puts under them the foot of the third: this is soon done, and is an excellent method, worthy of imitation: if it was brought into general practice, wheat would not be so apt to sprout as it is.

ber of weeds that are cut down with the corn when it is mowed: these weeds will be of little use to us in England, as it is but very seldom that we fodder our cattle with wheat straw. So far useful the cutting these weeds at harvest certainly may be, viz. that such of them as have not seeded will be prevented doing it for that season; but the misfortune is, that most weeds perfect and shed their seeds before wheat is ripe; so that, after all, the surest method of destroying weeds is to keep the ground clean when it is cropped, and to hinder them by frequent plowings from seeding when it lies in fallow.

If any thing new occurs in town on the subject of husbandry, I should be glad to be informed by you, as it is now become my favourite study; and since I have retired entirely into the country, speculations and experiments occupy my whole time.

Yours,

Essex, Sept. 1, 1763.

S. K.

NUMBER V.

A Letter to one of the Editors, being a Description of the Manner in which Canary-Seed is raised in the Neighbourhood of Margate in Kent.

S I R,

I Received, a few days ago, the proposal for the *Museum Rusticum et Commerciale*, and cannot but express, in the warmest terms, my approbation of your scheme: I sincerely wish it may meet with all the success it merits, and that you, and the rest of the gentlemen concerned, may hereafter reflect with pleasure on the good effects of your public-spirited undertaking. We wanted much a repository for detached pieces on the subject of husbandry: it will often induce me to send you my thoughts, which you know have been long attached to the contemplation of Nature and her produce. I propose spending the summer at this place, which is situated in an island that will furnish many materials for
future

future letters, as the methods of husbandry practised here are, in many respects, peculiar to the place.

Determined that something of my writing should, if possible, appear in your First Number, I am now sat down to give you a few scattered observations on the culture of canary-feed: these I have collected from some occasional conversations with the farmers in the neighbourhood; they are a good sensible set of men, and know more of the world than farmers * in general do.

I find they generally chuse to sow it on fresh land, that is, such as has only borne grass. After plowing up the lay, and bringing the land into tolerable rough tilth, they sow it with peas; these are kept clean hoed as usual, and yield a good crop. The next year the land is well plowed, and planted with horse-beans, which thrive well in this island. These two crops effectually kill the greensward, or grass; take off the rankness of the soil; and the frequent hoeings, which are necessary to keep the weeds under, bring the land into fine tilth. After the beans are off, the land gets a thorough plowing, and is then left till spring: about the beginning of March, if the weather is fine, and the season is dry, the land gets its last plowing; immediately after which the canary-feed is sown.

In this neighbourhood the farmers used formerly to sow canary-feed with the broad-cast, spreading it all over the land; but when this was the practice, they found it very difficult to hoe and keep clean from weeds: at present they sow it on furrows made a-crofs the land, constantly taking care to make the ridges betwixt the furrows as sharp as possible: by this means the seed, which is sown by hand, slips from the sides and tops of the ridges into the furrows, and
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* This may easily be accounted for, as there is such a constant intercourse betwixt the island of Thanet and the metropolis; and perhaps it may be partly owing to the genteel company which resorts to Margate, that the farmers in that neighbourhood are more civilized than their brethren in many parts of England. There are not probably any set of men so attached to old, though senseless customs, as the farmers; and they seem to be nearly of the same disposition in other parts of Europe, particularly in France, of which Monsieur du Hamel constantly and loudly complains. A.

the plants come up in regular rows *. The plants must be kept very clear of weeds by means of the hoe, weeding-hook, &c. and if it is a wet summer, it must be hoed several times: but of this the intelligent farmer is the best judge.

Three pecks of seed are in general enough to sow an acre, sometimes more, and often less. The canary harvest seldom comes on till the wheat harvest is entirely over, and the corn housed: but I must observe, that the wheat harvest is generally very early in this island. It is reaped with a hook; and as fast as it is cut, the reapers lay it on the land in *wads*, as they call them, or parcels about the quantity of half a sheaf of wheat unbound: in this manner, if the weather is favourable, it is left near a fortnight, at the end of which time the wads must be turned, that the other side may be dried. If the weather is very wet, they must be turned oftener, to prevent the seed from sprouting.

The

* This is a faint imitation of the new method of husbandry invented by Mr. Tull; the crop of canary coming up in rows with intervals betwixt the rows. It were to be wished, that the new husbandry had a fair trial in England; especially as it may, in some degree, be executed with the instruments commonly used. Suppose that, in sowing a field, the sower, after laying his seed thinly in one furrow, should lay none in the next which the plow turned; let him then sow another furrow; by this means there will be two rows of corn in three furrows: afterwards, to form the interval, let five or seven furrows be turned, according to the richness of the land, without laying any seed in them; and in the same manner the sower may go through the whole field. When the wheat comes up, if it is too thick in the rows, it may, at a trifling expence, be thinned with a small hand-hoe, leaving the plants about three or four inches distant from each other. Hitherto all is done with the common plow; and to stir the intervals, and keep them clear from weeds, the Rotheram plow may be used, taking care in the last stirring, that the plants be earthed up in a proper and husband-like manner. This method of practice will not, it is true, be perfect in its kind; yet the farmer may derive many advantages from it: by sowing the intervals with wheat the next year, he will have two successive crops of that valuable grain, each nearly as considerable as in the common way; and he may afterwards take off a full crop of barley; then fallowing it, or sowing it with turneps, which is perhaps better, he may, with the help of a moderate quantity of manure, renew his crops. Horse-beans or peas may be sown instead of turneps, if the land is strong. E.

The price of reaping canary, in this part of the world, is from six to eleven shillings per acre, and the price of threshing and dressing it is five or six shillings a quarter. According to the goodness of the land, and the tillage that has been bestowed on it, the farmers here expect their return to be from twenty-five to fifty bushels per acre, but the common crop is from thirty to thirty-four. Observe, however, that the farmers never pay so much as ten or eleven shillings an acre for reaping this crop, unless the canary be very much lodged and tangled, which it often is, owing to the land on which it grows being fresh, rich, and rank, and to the high winds to which this island is subject.

They sow successive crops of it on the same land for eight or ten years; and sowing canary would be a very good improvement in lands which lie convenient for water-carriage to the London markets, was it not a crop the farmer ought by no means to depend on, not only because the return, or the quantity it yields, varies greatly, but also on account of the fluctuation in the price of this seed in the London markets, where the greatest, and almost only, demand is. Adieu. I purpose writing speedily to you again on the subject of husbandry.

Margate,

Your's, &c.

Aug. 25, 1763.

RUSTICUS.

NUMBER VI*.

A Letter from the Reverend Mr. Jackson, to R. N. Esq; on the curing of rank coarse Meadows, and cultivating Cabbages as Food for Cattle, &c.

S I R,

EVER happy in obeying your commands, I shall forthwith inform you what methods I pursued to make the meadow at the back of my house so good as it is. You

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E

well

* The editors are much obliged to Mr. N—— for communicating this letter to them as well as to Mr. Jackson, for consenting to its being published with his name annexed. Any future communications from Mr. Jackson will meet with a very favourable reception.

well remember, that when you thought me worthy of supplying the place of the late incumbent of this rectory, this meadow was wet, poachy, over-run with rushes and flags, and the little grafs that grew on it was coarse and rank.

I at first ignorantly enough imagined it was owing to some deficiency in the soil ; yet being somewhat doubtful, in the middle of the summer, when the season was dry, I caused a deep trench to be dug in the meadow, and on examining the soil, found the labourers threw out a rich black earth, and that it had a sufficient depth.

This encouraged me to proceed. I immediately had deep drains cut all over the land at proper distances, to carry off the superfluous water : my next work was, to cause all the rushes and flags to be mowed as close as possible to the ground, and the whole meadow covered with coal-ashes.

This had not the desired effect ; for the succeeding spring the meadow was again almost covered with flags and rushes. I was now determined to plow it, which I did the latter end of the summer. Still thinking that the earth was not stirred to a sufficient depth, I hired several stout labourers, and agreed with them to dig it for me, two spit deep at least, for three-pence a rod : they did me justice in their work ; for when it was finished, the whole had the appearance of a clean well-kept garden. This digging was performed early in the spring, after the frosts were gone off.

Being unwilling to let land, on which I had laid out so much money, lie idle, I caused the whole of it to be planted with the largest kind of cabbages*. I allowed each of the plants a space of four feet to extend its roots.

At first the plants seemed scattered, and at a great distance from each other ; but they soon began to thrive apace. I took great care that the intervals were kept quite clear of weeds by frequent hoeing ; and twice in the summer I caused them to be stirred with the spade : this had

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* Carrots may also with great advantage be cultivated in the fields, and are extraordinary good food for horses, cows, oxen, sheep, hogs, or poultry, which thrive on them amazingly. A.

a surprising effect, and the plants grew to a wonderful size and weight, the land seeming entirely covered by them.

When my crop of cabbages was come to perfection, I caused some of them to be boiled for my family use, and with great satisfaction found they were much sweeter than any I ever had from my kitchen-garden: this I attributed, and perhaps not without reason, to the land not being dunged.

Being at a loss what to do with my crop, which was not saleable in my neighbourhood, I came to a resolution of giving them to my cows, which fed on them plentifully, and greatly encreased in the quantity of milk they gave; but the milk had a disagreeable taste, as well as the butter which was made from the cream of it; but for this I soon found a remedy by using Hale's method of ventilating it.

I afterwards, with some of these same cabbages, brought four large hogs so forward in flesh, that six bushels of barley meal made them all completely fat and fit for the pickling-tub; and they turned out most excellent pork, without any bye-taste: I must however notice, that I was at first obliged to cause the cabbages to be boiled for the hogs, to induce them to eat hearty; but they were soon by degrees brought to relish them raw.

My poultry were extremely fond, both of boiled and raw cabbages; and my draught-horses, when it was cut small, relished it much when mixed with oats, and seemed rather to thrive from the change of food; they also eat much less hay than usual.

I was not at all displeased with my experiment, and I have every year since caused a piece of meadow to be dug and planted with cabbages for the above purpose.

In the spring I caused all the stalks to be pulled up, and the land strewed over with the sweepings of my loft, and the bottoms of my hay-stacks, adding some seed of the sweet, white-flowered, or honey-suckle trefoil*: I then

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* Mr. Miller, with very good reason, greatly recommends the honey-suckle trefoil to our notice, as worthy of being particularly cultivated: he observes, that it is common in most of our pastures;

ordered my workmen to fill up the drains with witch-elm faggots: over them were laid some large stones, and the whole covered with loose earth, sown with hay-seed like the rest of the meadow: by this means I lost no ground, and the whole field took the appearance it had when you saw it, and bears as good crops of as sweet hay as any in the parish.

It is now five years since I laid it down again in grass, and there has not in that time been the least appearance of either rush or flag. By the experiment I have related to you I gained two pieces of knowledge; I first discovered new uses for cabbages, and lastly hit on a method of meliorating and curing a rank meadow.

As to using cabbages * for feeding cattle, &c. it may not perhaps be looked upon as any very valuable acquisition in husbandry, though I have found advantage from it; yet the curing rank meadows is certainly worthy our attention, as there are in England many thousand acres of coarse meadow-land let under five shillings *per annum* each, which, prepared in the manner I have described, would be worth at least forty shillings an acre, perhaps twice as much, if near a great town or city. Happy in every opportunity of obeying your commands, I am, SIR,

Your most obedient,

N——,

And obliged humble servant,

Aug. 4, 1763.

L. JACKSON.

pastures; but no body has thought it worth while to save its seed. In the Netherlands the peasants have industriously gathered it, and now sow a great number of acres annually, solely with a view of supplying the English markets with it. This is no inconsiderable object, for, when there is a good crop, and saved from the spring growth, the seed produced from one acre will be worth twelve pounds. It is a great pity our English farmers are not more curious in the choice of their grasses; for some sorts are certainly much to be preferred to others, and it is no more trouble to cultivate the best than the worst sorts. N.

The reader, by referring to Plate II. Vol. IV. and Plate I. Vol. V may see some grasses which he will probably think worthy of being separately cultivated. E.

* We would recommend it to Mr. Jackson to try carrots and parsneps for feeding his cattle: he will perhaps find them answer to the full as well as cabbages, if not better; particularly for milch kine. N.

NUMBER VII.

To the Editors of the MUSEUM RUSTICUM.

GENTLEMEN,

I Herewith send you the copy of a letter I wrote some years ago to a worthy friend of mine, since dead: he followed the directions contained in it, and thereby greatly improved his land. You may, perhaps, think it deserving of a place in your collection; if you do, you have my consent to insert it; but I would only have the initial letters of my name printed: my friends know I love husbandry; but I should not chuse to lay myself open to the visits of curious impertinents.

To judge by your proposals, I should be naturally apt to conclude that your collection will be useful: it will at least tempt many to give their thoughts to the world, who would otherwise scarcely commence writers: perchance I may now and then trouble you; but at present I have only leisure to assure you that I am, GENTLEMEN,

Pall-Mall,

Your humble servant,

Aug. 25, 1763.

E. N.

*A Letter from E—— N——, Esq; to Dr. ****, in Kent, on the Use of Sea-Waure*.*

S I R,

YOU ask my advice relative to a piece of ground, or small farm, you now occupy yourself on the sea-coast: you observe in your letter, that the soil is gravelly, with a small admixture of redish loam; that the under *stratum* is clay;

* Sea-waure, or sea-wracks, or sea-weeds, are reckoned a very good manure where they are to be had at a reasonable rate. They must in their nature be very strongly impregnated with salts, which they impart by degrees to the land they are laid on, and thereby greatly fertilize it. If land is properly dressed with sea-wracks, the virtue of the manure will not be exhausted at the end of seven or eight years: this is a singular advantage, as the benefit of common dung scarcely extends to the end of two years. A.

clay; that it has by the last tenant been plowed out of heart, and now yields only a poor starved grass.

You would wish, I suppose, to get this land into good order as soon as you can; but in these cases no good is got by being in a hurry. I take the natural surface to have been originally a shallow hungry gravel, with very little mixture: when it came to be plowed, some of the clay was accidentally brought up by the share, and blended with the gravel: this, after having been, in a few years, rendered mellow and tractable by the influence of the air and sun, is what now bears the appearance of loam, the sandy part of the gravel having made it less compact, and given it a looser texture; and, in fact, whatever virtue there is in the soil proceeds from this mixture.

As we now seem to have found out in what manner this land came to be worth any thing, it naturally points out to us a method of improving it, so as to make it of real value.

Nature is our best guide, and experience will at any time teach us what we may safely do.

Experience has already convinced me in several instances, that the under *stratum* of earth may be always safely, and sometimes advantageously turned to the surface*.

Having premised thus much, my advice is, that you should immediately set about procuring as much sea-waure, or weed, as you conveniently can; not that which is left
by

* There is not the least doubt but that the under *stratum* of earth may almost always with advantage be turned up to the surface, especially where the upper bed is of a nature different from it; as for instance, if a thin bed of sand covers a close, compact, and seemingly barren clay; if the farmer is timid, and takes care not to cut with his plow into the clay, his land will scarcely bear any thing; but let him plow deep, and let the clay lie some time to mellow by the influence of the frosts, air, rain, &c. he will in a few years find his soil greatly improved; and the more it is mixed by frequent plowings, the nearer will it approach to the nature of a good loam. O.

Since the first publication of this part of our work we have heard of many instances of the good effects of deep plowing; and particularly a friend to one of the editors informs him, in a private letter, dated May 5, 1765, that by deep plowing he has almost doubled the value of a farm in Suffolk, within less than seven years.

by the in-flowing of the sea, but what is gathered at low-water from the rocks, &c. for this last is of much superior virtue and duration.

Whilst this work is doing, take care to lay in a sufficient quantity of lime and raw chalk, and let your men get ready a large heap of earth: loam would suit best, and if inclining to clay, it will not be the worse, as the soil to be mended is light and gravelly. Your next care must be to form your compost-heap, which is to be done in the following manner.

First, let your workmen spread a thick layer of the earth they have got together, over that a bed of sea-waure, then chalk*, and lastly the lime unslaked, being careful however to cover the whole with a thick layer of earth: it is necessary to remark, that the whole depth of all the layers or beds taken together, or of the whole heap, should not exceed six feet, the length and breadth as much as may in discretion be found necessary. This work you should set about as soon as you can, and it must be suffered to lie mellowing as long as possible.

The sea-waure and lime should be nearly in equal quantities, twice as much chalk, and as much earth as will equal all the other materials taken together in quantity.

By disposing them in the manner I have directed, the lower bed of earth will be greatly impregnated with the saline qualities of the sea-waure, and the chalk being porous will imbibe, by the power of attraction, much of its moisture. The lime will gradually flake by the dampness it will receive from and through the earth that lies over it, and

* We should imagine it would ferment better if the lime were to be laid over the first bed of earth, next to that the chalk, then the sea-wrack or waure, and lastly earth again; as the autumnal rains, soaking through the upper earth, would then carry with it some of the salts of the sea-waure, and impregnate there-with the chalk: this, together with the flaking of the lime under it, would raise in it the beginning of a fermentation, so as to dispose it to break the sooner when laid on the land. A lump of pure chalk, laid but a little depth under the surface of the earth, will lie for years without dissolving. If the autumn should prove dry, we imagine it would not be amiss to pour a moderate quantity of water over this compost, as it would forward the fermentation. T.

and will by its consequential warmth raise, as it were, the appearance of a fermentation in the chalk it covers, and cause it to be more readily acted upon by the influences of the air, sun, &c. when it comes to be laid, with the rest, on the land.

We must now think of what is to be done with the land before this compost is laid on.

To proceed then, get some foot, (if you can, wood foot; if not, that from London will do) wood-ashes, and flaked lime, one part of each of the first articles, and two of the last. Let these, in January next, be well mixed together in a heap, and let your workmen sow it by hand on the land, as it now lies in grass, to the quantity of thirty bushels on an acre.

If there come mild following rains, or dripping weather, as it is called, in the spring, you will have more seed than you would imagine could proceed from so slight a dressing to such poor land: this is not, however, all the advantage that is to be expected from it; for on turning up the grass it will dispose the land to ferment and meliorate before the other compost is laid on.

I would have you all next summer feed this land, and when the hurry of your harvest is over, give the whole of it a very deep plowing, so as to turn up a good deal of the clay bottom; let it then lie still till it has been in some measure mellowed by the winter frosts.

When you perceive the hard clods that were turned up begin to crumble on a thaw, take advantage of the next frost to lay about five loads * of the compost on each acre, which in the beginning of the winter must be prepared by being turned and well mixed. As soon as conveniently can be, after this manure is laid on, let the land be plowed, observing to break all the lumps of chalk that are bigger than a man's head, till they are reduced to that size†.

Keep

* This is but a small proportion; yet, as the dressing is more than once repeated, it may probably have the desired effect. It must be allowed, that when the manure is not all laid on at once, it may be more easily mixed with the land, and will more gradually raise a fermentation. R.

† If the chalk was more broke, it would, perhaps, be still better. E.

Keep the land plowing the whole following summer, as well to keep down the roguery, as to break and reduce the soil, and mellow the fresh earth; but particular care must be taken that none of the succeeding plowings be deeper than the first.

In the following winter lay five loads more of the same kind of compost on each acre, and in the spring, after giving it a preparatory plowing, sow it with oats*. Of these you will have of course a very plentiful crop†.

Let the land be then winter-fallowed, and in the first hard frosts lay on each acre five more loads of the compost; keep it plowing all the summer, and at the proper season sow it with wheat, observing that the seed be not spread too thick; for it will branch much, and the crop will, if the season is any thing favourable, be very great.

When your wheat is off, turn in the stubble as soon as possible, and get the land into as good order as you can against spring to sow barley.

As soon as the barley is got in, the land must have a dressing of sea-waure alone, it being laid on the stubble in the proportion of about one fourth part as much as you would use of dung. Let this be immediately turned in; and in the spring sow oats, rey-grass, and clover, to remain for two or three years, or longer if you chuse it.

When you break up the lay, you may take three succeeding crops, by only giving it a slight dressing of either

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* With respect to the succession of crops, this gentleman recommends, it need not be servilely adhered to; other crops, perhaps more adapted to the farmers convenience, may be substituted, observing however, that wheat be not sown first, but that a previous crop be taken off the land in order to abate its rankness. We thought it necessary to mention this, as there are many farmers who have land of the nature of that above described, who may be glad to make the experiment this gentleman recommends. E.

† If the land has not been well plowed, so as to mix the manure and under stratum of earth thoroughly well with the upper bed, the farmer must not expect his first crop to be considerable. A great part of the success of this experiment must of course depend on the land being frequently and properly tilled; in this case it can scarcely be over-done. E.

ding or sea-waure, and afterwards either let it lie fallow, or sow with the last grain clover; or, in fact, you may manage it in the same manner you would any other land in good heart, by varying the crops, &c. remembering however, that a slight dressing in time does much more good than first wearing out the land, and then bestowing a great deal of money in manure.

You may perhaps be apt to imagine that the first dressing I directed to be laid on the land, might as well be spared; but experience will convince you, that much of your success will depend on it, trifling as it may seem; for the salts with which the lime, ashes, and soot, are so strongly impregnated, will, when the land is plowed, occasion a slight fermentation, and thereby dispose it the better to receive the compost when it is laid on, and to benefit by it.

The chalk * may, it is possible, by some of your neighbours be deemed superfluous; but assure yourself, that though it is slow in its operation, it is no less certain; and when the effects of the lime and sea-waure begin to disappear, the chalk will be found a great fertiliser, and the benefits resulting from it will with proper care continue a great number of years: it is indeed difficult to determine how long.

Some farmers, I know, have complained that chalked land in about eighteen or twenty years grows worse than ever it was; but when that is the case, it is entirely owing to the obstinacy, ignorance, or avarice of the farmer, who
tires

* In the hundreds of Essex they chalk annually great quantities of land; by which means farms, which had been before let at less than five shillings an acre, are often so much improved as to be worth from twelve shillings to fifteen shillings, and even more, *per acre*. The chalk they use for this purpose is generally brought from Kent in hoys to Malden, from whence the farmers fetch it for at least fifteen miles round the country. It is to be observed however, that the soil in these parts is, for the most part, a stiff, and almost untractable clay; yet, when thus manured with chalk, it breeds as fine wheat as any part of England: the quantity they lay on is from ten to twenty waggon loads an acre. The benefit arising from chalk is not for the first year or two much perceived; but from the third year the land bears amazing crops for twenty years together with proper care, and a moderate portion of manure well timed. H.

tires his land out with repeated crops, without ever giving it the necessary intermediate dressings. A moderate quantity of a compost made of yard-dung and lime, laid on chalked land once in three years, would greatly contribute to prevent its being impoverished.

You may be already almost tired of this long letter ; but I thought it best to lay the whole matter before you at one view.

You have, if you make a proper use of it, a treasure, in being within reach of the sea-waure: the farmers in your neighbourhood will probably persuade you to lay it on, as they commonly do, unmixed ; but assure yourself that in most cases it succeeds much better when mixed with lime and earth, and if lime is not proper for the soil, earth alone.

As to the stiff clay which you mention to be the soil of your *upper toft field*, I do not know any thing that I can recommend better than plowing it well, and often, and laying on a large quantity of sea-sand* to break its stubbornness: you can scarcely over-do it. It is a good rule, never to let a stiff soil lie long still without plowing. Let folks say what they will to you, the only danger of plowing too much proceeds from the expences that attend it†.

Be free, and make any other enquiries of me you think proper.

I am very much yours,

Aug. 15, 1756.

E— N—.

* When a farmer, who has a stiff clay in his possession, is not within reach either of sea-sand or chalk, he may to advantage lay on pit sand, gravel, lime-stone, or brick-rubbish if he can procure it in sufficient quantities: any thing that will contribute to break the soil, and loosen the particles of earth, will dispose it to give forth its salts, which were before locked up; and this is, in fact, rendering it more fertile. What renders pure clay improper for vegetation is, its having too small pores; sand, on the contrary, has them too large; it must then necessarily follow, that by a judicious admixture of these two extremes, a lastingly-fertile earth may be obtained. E.

† One other danger there is in plowing much, particularly stiff soils, which is plowing them at improper seasons, for example, in wet weather; which would knead them, so as to make it very difficult to bring them afterwards into a proper tilth. E.

NUMBER VIII.

Lettre aux Directeurs du MUSEUM RUSTICUM.

J'AI vû, Messieurs, vôtre avertissement, cequi m'a, sans mentir, donné beaucoup de satisfaction : J'attens avec une impatience extreme la publication de vos pieces, ou je trouverai sans doute dequoy m'amuser et m'instruire. Il y a long tems que j'ai choisi l'Angleterre pour la patrie de mes enfans, quoique c'est dans la Suisse que j'ai pris ma naissance. Les Anglois sont veritablement libres; c'est ici qu'on cultivent sans cesse les recherches qui regardent l'agriculture, les arts, et les commerce. L'incluse est une lettre que m'a écrit mon cher frere l'hiver passé: si vous la trouvez digne d'être rendue en Anglois, j'y consens volontiers. Ce n'est pas sans plaisir que je me soussigne, ravi en admiration de vôtre dessein patriotique,

MESSIEURS,

*To the Care of Mr. New-
bery, Bookseller, in St.
Paul's Church-Yard.*

Vôtre serviteur tres humble,
I. T. N.

*Translation of a Letter from a Gentleman in Switzerland to
his Brother in London, on the Culture of Saintfoin in
Switzerland.*

YOU inform me, my dear brother, that you are absolutely determined to settle in England, and there spend the remainder of your days. Though I regret your absence, I cannot blame your resolution: it is a country of liberty; perhaps, in truth, more so than that in which you were born.

The climate of England is not to be found fault with, and must be particularly agreeable to you, after enduring for so many years the disagreeable heat of Carolina. It is true, you have acquired a comfortable independance; and it is a mark of wisdom in you, as well as gratitude, to resolve to spend

spend your annual income in that country, under the protection of which you acquired your fortune.

You have bought, you say, a little estate, at no great distance from the metropolis, and have thought of improving some of the lands by sowing saintfoin : you request me to let you know what are the methods in practice in this country relative to that grass, as, when you left Switzerland to go to our uncle in London, you were too young to gain the necessary knowledge in farming. I shall oblige you with pleasure, and the rather as I have had very good success myself in this particular article.

The roots of saintfoin penetrate very deep into the earth, by which means they do not exhaust the surface so much as one would imagine, the vigour of the plant considered : the roots are perennial, and consist of a white woody substance within, covered by a black outward coat or bark : from the crown of the root proceed several leaves, and some branches about two feet long, which incline on all sides. Our fodder is furnished from these branches and leaves. Saintfoin is a very vigorous plant, and yields a most excellent fodder.

It is not nice with respect to soil, but grows in almost any, if we except such as are clayey, very damp, and low, or stoney : the crop is in proportion to the goodness of the land ; but the saintfoin that grows on poor land, tho' less in quantity, is most nourishing and heartening for cattle, the virtues of it seem concentrated, and the cattle thrive much better on it than on such as grows in greater quantities on rich mellow land.

When we have it in our power to chuse our situation and soil for saintfoin, we ought to prefer a light land, gently sloping on the south side of an eminence : here it prospers to admiration *.

This plant does not thrive in the shade ; for this reason we should avoid having any trees in the fields that bear saintfoin : and it is subject to be sometimes chilled, by having snow lie too long on it in winter ; it should not therefore be sown on flat level land. To

* Mr. Miller, in his account of this plant, says it thrives on chalky hills, that have a surface of six or eight inches on the chalk, better than in any other soil.

To have a good crop, the land should be properly prepared, by having two or three good plowings between harvest and barley seed-time : the stones must be very carefully picked off the field ; and it must be cleaned from all kinds of weed and other such trash.

If it is likely that there will be a wet season, the spring is the best time for sowing saintfoin*, as it will be much forwarder than that sown in autumn : but if the spring is too dry, the sowing will be best deferred till about August, as by that means the plants will have time to acquire strength in their roots, and make vigorous shoots in the spring.

The farmer may take it for granted, that if the soil will admit of it, he cannot well plow his land too deep, or make it too fine : he will reap all the benefit of it in his succeeding crops.

In Switzerland we sow it three times as thick as we do wheat ; or, which amounts to the same thing, we use the same weight of seed, the saintfoin seed being so much smaller as to make that difference †.

Good seed should be heavy, plump, bright, and of a yellowish red colour : if, on opening the pods, you find the seeds black and shrivelled, reject it as of no value ; for it has been heated in the heap, and will not grow : if it appears white and shrivelled, the plant was cut before the seed was ripe ; from this you are to expect only starved, meagre, short-lived plants : you must therefore by no means sow it. The pods enclosing good seed should be plump, large, and armed on one side with small prickles : and they should also be of a deep

* According to Mr. Miller, the beginning or middle of April is the best season for sowing saintfoin, observing always to do it in dry weather, the seed being apt to burst with moisture. The writer of this letter says, if the spring is too dry, the sowing had best be deferred till autumn ; and that it is only when the weather is inclineable to be wet, that the spring is the best time for sowing it : we suppose he means only when gentle rains are expected, and not much wet weather, which, experience must certainly have taught him, would, as Mr. Miller observes, rot the seed. A.

† Mr. Miller says, three bushels is the most that should be sown of this seed on an acre, though four is the usual quantity : for our parts, we think two bushels full enough ; for saintfoin, if it has room, will branch much. A.

deep brown colour : but it is best not to depend on the appearance of the pods, but open them, and examine the seed.

The weather should be mild at the time of sowing the seed of saintfoin ; and it should be harrowed in, and not covered with above two inches of earth at most : some sow it in the spring with oats ; but this I by no means approve of : it is much better sown alone, especially if you would have a strong vigorous plant, that shall last for years.

In our very poor lands in Switzerland we sometimes pursue the following method.

Immediately after harvest we give the land intended for saintfoin a good deep plowing, laying it in high ridges ; in this manner it is left to be mellowed by the frost and snow : we take advantage of the first hard frost to carry on our dung, and manure it well.

When the frost breaks in the spring, we spread the dung and turn it in with the plow : we afterwards bestow at least two more plowings on the land, not only to keep down the weeds, but to make the land as fine as possible : in autumn we sow wheat, and have reason to expect a tolerable good crop.

When the wheat is got in, the land is again plowed, and left to meliorate and pulverize by the winter frosts : early in the spring it is plowed and laid level, the stones are all picked off, and the weeds cleared away : if rain is expected, it is now sown pretty thick with the saintfoin, otherwise the sowing is deferred till autumn. When poor land is managed in this manner, it will yield tolerable good crops of saintfoin for several years : it should not, however, be fed the first year, as the treading of the cattle will destroy the crown of the plant, and prevent its shooting the succeeding year : and sheep should never be turned in to feed on it, as they will crop it so close as to prevent its budding †.

Saint-

† Mr. Miller and the writer of this letter agree, that it is best to cut saintfoin : but Mr. Miller says, the after-crop should be fed with sheep for the sake of their dung ; whereas our writer observes, that sheep should at no time feed on it, lest, by biting too close, they should destroy the crown of the roots. We are inclineable to be of this latter opinion : though we know that sheep may, without very great danger, be turned on saintfoin for

Saintfoin comes up about a fortnight after sowing it, and if the weather is moist, something sooner. When the plants are come up, they should be set out at a proper distance with a hoe, that they may have room to spread. The young plants are very apt to be choked by weeds; they must on that account be kept very clear of weeds, till, by their branches, stalks, and leaves, they cover the land; after which there will be no danger of the weeds getting a-head.

As saintfoin seed is often faulty, it will not be amiss to make a trial of it, by sowing some of it in a detached bed of a garden, counting the seeds before they are put into the ground: by this means it may easily be known how many of them fail, and the quantity of seed to be sown may be proportioned accordingly.

Some have asserted, that saintfoin should not be mowed the first year: but this is an ideal precaution; for in Switzerland we think it rather does it good than harm to mow it in autumn; and experience every day convinces us we are right in our opinion. The first crop is not, it is true, very large; but the mowing causes the plants to branch, and gives strength to the roots.

No cattle, as I said before, should be turned on saintfoin the first year: and indeed, it is best, if possible, always to mow it. We have three crops of green fodder, or two of hay, from it, in one season in this country.

When we intend to save the saintfoin seed, we leave a part of it standing, and do not cut it till we observe, by the colour of the pods, which will then be of a deep brown, that the principal part of the seed is ripe: we then either gather the heads by hand, or reap them with a sickle, and lay them carefully on a cloth. The heads must be dried in layers three or four inches thick: if they were laid thicker, they would be apt to heat and spoil: when dry, we gently thresh them with sticks; flails would be too heavy; for if the seed is the least bruised, it does not come up. The stubble that remains
after

for a little time, yet, if they feed it at all, there will always be some of the roots destroyed: we think it, therefore, most eligible to exclude them from this grass, unless it is mowed and given to them green in cribs, which is an excellent method. A.

after the heads are cut off may be mowed, and given either dry or green to the cattle; for though a little sticky, they will not refuse to eat it.

I generally use my saintfoin green, foddering the cattle with it as soon as it is cut; and this I the rather do, because the making it into hay is such critical work: but when there is a likelihood of my being short of winter-fodder, I have no choice to make.

The weather should be very fine when it is cut; for as it is full of sap, it requires great heat to dry it; and if it happens to rain, it takes more damage than common grass; and it is best not to cock it*, as it is subject to heat in a very small space of time: if it is much wetted, it grows black, and loses all its sweetness†.

Even when saintfoin is seemingly quite dry, it is apt to heat in the stack; but this is easily prevented by spreading alternately a layer of good oat or barley straw, and another of saintfoin: when it comes to be used all together, it makes an excellent winter-fodder.

Great care must be taken both in turning the swarths of saintfoin, and in loading it on the waggons, as a very little stirring will, when it is dry, shake off all the leaves; and this greatly lessens its value: for this reason I make my men turn the swarths with the handles of their forks, which is easily done; and I never cart it, but either early

NUMB. I.

G

in

* Here Mr. Miller and our writer again differ. Mr. Miller says, that saintfoin does not require to be so often turned as other hay; for as the stalks are large, they will not lie so close in the cocks as to ferment: therefore he observes that in catching weather the cocks may be made large; and if they are turned and spread every other day, or once in three days, there will be little danger of its heating, so as to receive damage; but if it is spread and much exposed to rain and dews, the goodness of the hay will be exhausted. In this matter we join with Mr. Miller in opinion: perhaps the letter-writer never tried to dry it in cocks; if he had, he would probably have found it receive nearly as much benefit from the wind and air, as from the sun. A

† As good a method of knowing when it is sufficiently dry as any, is to twist a handful of the dried grass strongly betwixt the two hands; by the ousting of the sap, the state of it will soon be discovered. E. O.

in a morning, or late in the evening, when it is somewhat moistened by the dews.

Saintfoin is a very hardy plant, and bears, without being sensibly affected, the extremes of heat and cold; but the bottom of the land where it is sown must not be wet, and there must be room for the roots to spread.

A field of saintfoin on a good soil will last from sixteen to twenty years in prime, and even longer, with care; for if, after seven or eight years, some well-rotted dung is laid on it, the future crops, as well as its duration, will be greatly encreased. When it is sown on light land, marling it is of very great service.

But if after all a piece of saintfoin falls off, our method is to plow it up in autumn as deep as possible; give it another plowing in spring, sow it with oats, plow it again immediately after harvest, dung it, sow it with wheat; when the wheat is off, plow it again, and giving it another plowing sow saintfoin in it about the end of August; and this in general succeeds as well as that which was first sown on the land.

Thus, my dear brother, have I written to you what occurred to me on the subject of the culture of saintfoin: if any doubts arise, it will give me pleasure to be able to resolve them for you.

Before I conclude, I must give you a few cautions relative to this excellent fodder, which has of late so much improved this neighbourhood.

It is so very sweet, and cattle are so fond of it, that without great care they are apt to eat too much of it; whence often proceeds a surfeit, and sometimes a corruption of the mass of blood, and cutaneous eruptions: they should at first have but a little at a time given them, that they may be by degrees habituated to it: by this management the danger vanishes.

It is much more proper for slow draught-horses than for such as are used for berlins, or for riding; for it is apt to make horses thick-winded, foggy, and somewhat sluggish: for farmers horses nothing can be better, or more nourishing; speed is not required in them.

When

When saintfoin is intended to be made into hay for horses, it is best not to cut it till the seed is formed in the pod*, as by that means the hay will be much more nourishing; and when the dried seed itself is plenty, nothing better can be given to the horses by way of corn; for I can assure you from experience, that one bushel of it will go as far as two of oats.

When saintfoin is cut to be given green to cattle, it is best to mow it when it is in full bloom, as it is then most juicy, and fullest of sap, and will consequently afford most nourishment to the cattle. The best way of managing is to cut no more than will serve for the day; and by properly apportioning, or parcelling out the field, there will be, during the whole summer, some of it in order to cut for green fodder.

If this green fodder is intended for sheep, it may with great propriety be cut just before it flowers: the stalks are then in a tender state, and very nourishing and good either for wethers or ewes. When it is to be made into hay for sheep, the same rule should be observed.

I have very little more to say on the subject of saintfoin, except that, as when a saintfoin lay is brought into tillage, it prepares land very well for wheat or rye, and bears good crops, there is seldom occasion among the good farmers to try how long it will continue in heart, as they generally break up these lays in turn, and find it advantageous so to do.

You need not, my dear brother, be backward in laying your commands on me; particularly, when they are to

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write

* Mr. Miller says, that those who are desirous to have the hay in perfection, should cut it before it begins to flower, when it abounds more with juice, and will nourish cattle much more than that which stands to be in full flower. The opinions of these two gentlemen in this matter seem to be quite opposite; yet may they be reconciled: the lands on which saintfoin is generally grown in Switzerland are poor; on such it is certainly best not to cut it till the seed is formed, as the hay will thereby be more heartening, and the poverty of the land will prevent the plants from being large and sticky; whereas in our rich lands, were the saintfoin left till the seed was formed, the hay would be much too coarse: in rich lands, plants seed later than in such as are poor. A.

write on a subject which you know has been the chief amusement, as well as business, of my life.

May God grant you many years to enjoy the satisfaction you must certainly reap in your country retreat! Agriculture has always been the employment of our ancestors: let us not then be ashamed of that which has for ages past reflected honour on them.

Your loving brother,

Jan. 29, 1763.

S. N.

NUMBER IX.

A Letter to the Editors, relative to an Experiment, made in the Year 1757, of transplanting some Trees in the Summer whilst the Sap was in Motion, and they were in full Leaf.

GENTLEMEN,

IT has been an opinion generally received, that trees transplanted whilst the sap is in motion seldom succeed; therefore the gardeners recommend this work to be done betwixt the fall of the leaf, and the first shooting of the buds in the spring: it must be observed that I am not here treating of evergreens, as they require a different management.

I was long in doubt whether there was any foundation for totally excluding the business of transplanting trees from the summer months. Some few years ago I had an opportunity of giving this matter a fair trial by experiment.

In the spring of the year 1757, I had occasion to lay two fields into one: they were separated by a ditch, and by a bank, in which grew many white bullace-trees, (*prunus sylvestris fructu majore albo*, Raii Syn.) some filberts of the kind that bears red kernels, (*corylus sativa fructu oblongo*, C. B.) and some nut-trees, such as are in many parts of England called *cobb-nuts*, which I take to be a species of the *corylus Byzantina**, the nut being much larger than the common hazel-nut.

All

* This *corylus Byzantina* may be found in Miller's Gardener's Dictionary, under the name of *Corylus stipulis linearibus acutis*: he observes that it is not common in England, but grows naturally

All these trees bore excellent fruit : I was therefore unwilling they should be entirely lost, which probably would have been the case had not I interfered ; for the workmen assured me that it was too late in the season to transplant them, being about the middle of May, the sap being in motion, and the trees in full leaf.

Being determined, however, to make an experiment at least, I caused a corner of a field which was over-run with nettles and other such trash, to be carefully dug, and afterwards railed off. When this was done, I ordered the workmen to lay aside all the young trees and shoots, in order to their being transplanted.

Some of the roots were cut, bruised, and otherwise injured, in taking up : these I made my gardener look carefully over, and cut off such parts of the roots as were bruised, split, or injured, with a sharp pruning-knife : I then myself took the knife, and pruned off the heads of the plants in proportion to the loss they had suffered in their roots ; from the heads of such as were taken up with their roots nearly entire I cut very little.

My next work was to have them planted, which was done in the following manner : the plants which were taken up with the roots entire, were first carried to the ground ; holes were dug in rows at about three yards distance for the bullace-trees ; when they were put into the ground, the earth was carefully settled about their roots, and stakes were driven into the ground to prevent their being shaken by the winds : in this manner all the plants were removed, care being taken to give them plenty of water for several successive evenings.

Any

turally near *Constantinople* ; that they are of the same form as common hazel-nuts, but more than twice as large : the cups in which the nuts grow are, he says, large, deeply indented at the brim, and almost cover the nut. One of the editors has, in several parts of England, seen large nuts with the above characters ; so that perhaps this sort of nut is not so scarce with us as has been imagined : it is much better eating than the common hazel. The *cobb-nut*, mentioned by our correspondent, may very probably be of this kind ; though, as he does not enter into the particulars of its characters, we can only judge it to be so from its size. H.

Any one who is acquainted with nature must know that the bark on the north side of a tree, whilst growing, is thicker than that on the south side: this may easily be proved by cutting it with a knife: the north side is doubtless most exposed to the winter's cold; this seems therefore to be a natural and additional defence given to trees, that they may be the better enabled to live through the winter.

Though this fact is known to many, yet few gardeners pay any attention to it, but think that it is a matter of indifference, when a tree is transplanted, if that side which faced the north when it grew in a state of nature, is then turned to the south, &c. But does this stand to reason? can it be supposed that the thin southern bark is so capable of resisting the influence of the cold northern blasts; or that the thick bark of the northern side, now turned to the south, does not prevent the sun acting so powerfully as it would otherwise do on the organs through which the sap is conveyed from the roots to the branches? This you may imagine was my opinion of the matter. I therefore caused all the plants to be carefully marked * before they were taken up, that they might be as little shocked by the change of place as possible.

The effect answered my most sanguine expectations, for not one in twenty of my plants failed; and what few did fail were

* There are many advocates for this method of planting; but it is not perhaps of so much consequence as the writer of this letter seems to make it. Mr. Miller says he has many times made the experiment, and could perceive no visible difference in the thriving of the plants. We are however of opinion, that this method may be often useful, and sometimes even expedient; particularly in transplanting trees which are not very hardy, and have yet been exposed to the free impulse of the air. Perhaps Mr. Miller made his experiments on plants which before stood thick in a nursery: in such it is not wonderful that there should be no great difference in the thickness of the bark on the northern and southern sides, or that the plants should thrive in all exposures alike. To mark the northern side of a number of trees before they are transplanted is very easy; to place them, when transplanted, in the manner they before stood, can do no harm, and may chance to advance the growth of the plant: on that account we recommend the practice. N.

were such as had entirely lost their fibrous roots in taking up: these were by my orders placed by themselves.

In looking over my plantation in the autumn, I found that such of the bullace-trees as were taken up with their roots entire, and would have borne fruit if they had not been transplanted, had then some fruit on them, though not in such plenty as might have been expected had they not been removed: they were, in fact, but very little checked in their growth.

Such as had lost part of their roots, and were pruned in their heads, were in a very thriving state, though none of them bore fruit the first year; the rest of which some had entirely, others only in part, lost their fibrous roots, were considerably checked, and some quite dead; yet of these last there were much fewer than I expected, for many of them would not in all probability have lived, had they been transplanted in October after the fall of the leaf.

In my filberts and cobb-nuts I made the same observations, except that they neither of them bore any nuts the first season.

The trees now all make a glorious figure, having thriven amazingly: I have plenty of filberts and cobb-nutts, and a prospect of a considerable quantity of bullace-plums: the fruit is, if any thing, improved since the transplanting.

I attribute my success in this experiment to several causes. In the first place it is to be observed, that great care was taken to settle the earth properly about the roots, and they were staked to prevent the small fibres, which they necessarily put forth in search of nourishment, from being disturbed. One principal cause of transplanted trees not succeeding is, that after the mouths or pores, in the outer surface of the roots, have adapted themselves to the particles of earth which surround them, and from which they are to imbibe nourishment, they are often, by some sudden and violent motion of the stem of the tree, disturbed: the whole process must be again renewed; and as the first operation is retarded, the motion of the sap must of course be, at least for a time, checked; and this cannot but affect the whole plant.

In

In my experiment, as I have particularly mentioned above, I caused the aspect of the trees to be attentively marked; and this, for the reasons already given, I esteem a matter of consequence.

Where the roots were damaged I caused them to be cut off with a sharp knife, and pruned the heads in proportion only to the loss of roots they had sustained. If the damaged parts of the roots had not been cut off, I am apt to think those parts might have imbibed too much moisture, which, together with an extravasation of fermented sap, would have brought on a *caries*, (a decay) which might probably have been fatal to the plant.

The roots were cut sloping*, the flat surface being under the roots, so as to bear on the ground when the tree was set erect.

Many are fond, when they transplant, of taking off the greatest part of the branches of a tree; but this is very bad management: every branch is supposed to have its correspondent root in the earth, on which it acts by attraction, somewhat like a syphon; the sap rising from the roots nearly in the same proportion it is transpired through the branches and leaves†.

If this is the case, it must stand to reason, that on transplanting a tree, it is much better to leave too much than too little head on: the greater the attraction is from above, the more eager will the roots be to send forth their fibres
in

* This is a very good way; for the rain soaking perpendicularly through the earth, less of it is imbibed by the wound in the root when it is cut so as to have the slope downwards. N.

† Mr. Miller is also of opinion, that the heads of trees should not be too much cut on transplanting; and he mentions in his *Gardener's Dictionary*, under the article *Planting*, an experiment which he made on two standard almond-trees in the year 1733. The branches of one of them he pruned in the usual manner; from the other he only cut off the smaller branches, and such as were bruised or broken: these were, when removed, as nearly as possible, of equal strength, and of the same age; they were planted in the same soil, and to the same situation; had equal attendance, and were managed, as nearly as could be, in the same manner; yet in the spring, when these trees began to shoot, that whose branches were most preserved had greatly the advantage of the other, being much more vigorous, strong, &c. N.

in search of the necessary food ; and when once the sap is put in motion by this powerful attraction, so that the life of vegetation is, as it were, renewed, then, and not till then, is the time to abstract any of the branches ; and it should be done with such discretion, that the parts to be fed may be as nearly as possible proportioned to the state and abilities of the parts which are to go in search of, and provide, food.

When trees are transplanted in autumn, I am not for abstracting any of their branches till spring ; for the sap being then, as it were, at rest, the branches require not any fresh supply of nourishment ; consequently, if there should be any deficiency in the roots, it is not so soon felt. When the heads of the transplanted trees come to be pruned in the spring, on the first visible motion of the sap, great regard should be had to the state the roots were in at the time of removal.

I have seen many unskilful gardeners, when they have been about to transplant a tree, cut with great assiduity all the fibrous roots away before they would venture to put it into the earth, under a notion that these roots would speedily rot, and thereby affect the health of the tree. But this is far from being the case : the fibrous roots should be as much as possible preserved *, and carefully spread, on the removal, at a proper distance in the earth : it is to these fibres the plant owes the greatest part of the food it receives, they being by their form much better adapted, than the larger roots, to extract from the earth its nutritive juices : we may then reasonably conclude, that when they are totally,

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H

or

* We suppose this gentleman means that the fibrous roots should be preserved only when the plants are not to be removed to any great distance ; for if the plants are to be sent far, so as to be any considerable space of time out of the ground, it is certainly much the best way to cut off the fibrous roots ; for being of a delicate texture, they soon dry in the air, and lose their imbibing faculty : if they are not then cut off, they rot in the earth, and greatly injure the new roots which are produced. Where a tree can be put into the earth before the fibrous roots are withered and dry, we recommend them to be by all means preserved, as the plant will the sooner vegetate, and the course of the sap will be less interrupted : with proper care in the planting, the mouths of the fibres will soon adapt themselves to the pores of the earth, and thence extract the necessary food. A.

or in a great measure, abstracted, the vegetative power in the plant must be greatly weakened, its growth must be checked, and its health, if not its life, be fatally affected.

The use of these fibrous roots was fully verified in my experiment; for not a single plant failed, which was not nearly, or totally deprived of them: and this I was the better enabled to know, because I took care to plant, in separate places, such as were taken up with their roots entire; those which were somewhat, though not greatly injured in their roots; and, finally, such as were, as above described, in a manner deprived of all their fibrous roots.

I am sensible it may be urged, that my experiment was made on plants of a hardy nature: this is in fact true; but I see no reason to conclude, that it would have failed if tried on some which are of a more tender and delicate constitution. The principle of vegetation is alike in all plants; and though some may by accident be sooner affected in their health than others, yet are there certain circumstances, wherein all plants, which are either indigenous, or habituated to the climate, will live and prosper, and others, in which all will instantly die.

My experiment succeeded on bullace-trees, which are a hardy kind of wild plum; and the bullace differs only from the plums which are commonly cultivated in gardens, in that it has not submitted to the operation of engrafting; but whether this operation so far affects a plant, as to make it bear transplanting worse than it would do in a state of nature, is with me a doubt: I am indeed rather apt to think that an engrafted tree would better bear transplanting than one which was never engrafted; for the course of the sap in the first is already checked, whereas in the last it is free and uninterrupted.

I found this doctrine on a method which is almost constantly put in practice by the nursery-men who supply the gardens about London with plants. It is for their credit that the young trees they sell should take root readily, and thrive on their removal; and in order to effectuate this, they annually remove all the plants in their nursery, judging that when they are used to be thus checked, they do not so
much

much feel the removal when they are sold ; but on the contrary, getting into better earth, which is generally the case, and failing of their annual transplanting, they thrive apace.

From what has been said, I think I may reasonably conclude, that almost any tree, of a moderate size, may without much hazard be transplanted in the summer season whilst the sap is in motion *: more caution however must be used than if it was transplanted at any of the usual times of doing that work ; and the great care is, so to dispose the roots in the new earth, that they may be enabled with the greatest expedition to collect a fresh supply of nourishment, so as to check as little as possible the vegetation of the plant.

Too little nicety is in general used in the business of transplanting : it is no unusual thing, where a plant is well rooted, for the workman to lay the roots all of a heap in the earth ; whereas they should be regularly disposed, as nearly as possible, in the same position they were in before the removal of the plant. Nature is the best mistress in husbandry and gardening : and if we follow nature, we shall seldom fail of success.

I must once more recommend it to such as intend to transplant trees, especially in the summer season, that they be effectually secured from being shaken by the winds ; a small shock will discompose their roots, and even possibly make them fail.

I make not the least doubt but very many of your readers will look upon this affair as a mere matter of curiosity, which there will be seldom occasion to practise in the common works of gardening ; but I can assure such, that by transplanting carefully in the beginning of the summer they will save a whole year, and be at least as forward as if they

H 2

had

* The writer of this letter seems to think, that for a tree to succeed when transplanted in the summer season, it should have all its fibrous roots preserved ; and this may be the fact : but then it follows of course, that trees cannot in the summer be removed to any great distance, as it is impossible to preserve the fibrous roots, for any length of time, in a state proper for imbibing the nutritive juices of the earth, particularly in the summer, when the air is so much drier than it is in the autumn and spring, the common seasons of transplanting. O.

had removed their trees the preceding autumn; whereas, if they neglect the opportunity, they must of course wait till the following autumn, when the work will be done, in all likelihood, in the usual manner, and years of time lost.

My letter is, in all probability, already as long as you would chuse it: I shall, on that account, forbear reasoning any more on the subject, and conclude with an assurance of my being,

GENTLEMEN,

July 16, 1763.

Your most obedient servant,

S. L.

NUMBER X.

Mr. Jeremiah Brown's Method of making Saltpetre; published in Virginia, by Order of the Trustees for the Improvement of Arts and Manufactures, and in England by Order of the Society for the Encouragement of Arts, Manufactures, and Commerce.*

SALTPETRE is to be found in tobacco-houses, stables, cow-houses, hen and pigeon-houses, and in any covered place where the influence of the sun seldom reaches. A sixty-foot tobacco-house will yield upwards of 16 Cwt. a year, and so in proportion for larger or smaller houses.

In order to prepare the floors for attracting nitre, all dung and other trash must be removed; and if the floors are not level, they must be made so by laying on marle, or any soil not too stiff, which must be lightly trod down with their feet.

The floor being thus prepared, sprinkle strong ambeer over it, made from tobacco-trash, and cover it with wet ground leaves, or other tobacco-trash, for a fortnight; then clean

* Was not this paper of real importance, and had it not been published by order of the Society, we should not have given it a place in our collection. The *Museum Rusticum* is not to consist of the gleanings of news-papers, &c.

We must not omit making a remark in this Third Edition, namely, That all the news-papers and magazines have made free with the pieces published in our Four Volumes: perhaps it will be said, it shews our work has great merit: be it so; but they should acknowledge the fountain whence they extract their treasures.

clean out the trash, and in any cool dry morning that succeeds, you will find on the floor the nitre attracted and condensed like hoar frost; sweep this off lightly, and put it by in some hogheads, or safe place in your house, until you have leisure to go through the following process. This work you must carefully repeat as often as you observe the above-mentioned appearance of nitre on your floors; by which means you will soon be furnished with a competent quantity to employ a leisure day.

The *process*. Make a lye from this earth in the same manner as is usually done for soap, noting that the earth is not to be hard-packed on the straw in the bottom of your lye-vessel, which would retain the water to be poured on it too long, and overcharge it with saline particles, to the great interruption of the process: place the earth hollow in the vessel, for the reception of the water; the first put to it must be warmer than new milk from the cow; afterwards add cold water: fix a vessel to receive the lye as soon as you begin to put the water in, as it will not remain long upon the earth, but in a few minutes begin to drop into the receiver: if it runs foul, it must be returned upon the earth: as soon as it has dropped a gallon, you may begin to boil it in a cast-iron pot. Every bushel of earth will require near eight gallons of water. Continue to boil it gently until you have fully charged your pot with the lye, and you will find the watry particles evaporate until it is reduced to a thick oily consistence, shooting into small icy crystals, which you will easily perceive, by exposing the fuds, in a spoon, to a cold place: then put the liquor out of the pot into wetted wooden trays, and set it by in a cool place for the first growth: if you accidentally boil it too thick, add a little cold water: when your trays have stood with the fuds a few hours, you must raise one end to let the lye drain off from the petre-salt, which is the first growth, and which, by boiling a second time, will yield you a fresh quantity.

After it is thus drained and become dry, you may put it into casks or tubs, until you have leisure, without prejudice to your crops, to refine it.

To refine *petre-salt*. Put into your pot about a third of the quantity your pot will hold of this first growth, and set it over the fire : you are to be provided with an iron rod, or poker, to stir it : as soon as it begins to melt, you will see it begin to boil furiously : keep it well stirred down, as at this time it is very apt to take fire, which will destroy the whole : when you observe it in the boiling to look of a dirty white, slacken your fire, and stir it briskly for a quarter of an hour ; then encrease your fire, and continue the stirring, tho' the danger of burning it is now over : the pot, before it is sufficiently melted, will be, at the bottom, of a flaming red, and the matter will appear like boiled cream ; and when it becomes whitish and liquid, pour it upon a stone, or some earthen vessel, or a hard well-rammed earthen floor, clean swept. As soon as it is cold, it will become hard, and if you throw it upon a stone, will ring like broken china.

If you have not leisure immediately to clarify it, put it into a tub in a dry place until some convenient opportunity.

To clarify coagulated *cream of nitre*. To every pound of this matter put six pound of water, after you have broke it into small pieces : put your pot upon the fire, and stir it until it is well dissolved ; then make the fire all round the pot, which will cause it to boil in the middle, and prevent any waste by its drying, and sticking on the sides of the pot ; and as soon as the earthy matter begins to settle in the pot, pour the liquid into a tray, or other open vessel, that its sediment may settle : pour off the clear liquor, and evaporate it with a gentle fire, until in a spoon it will shoot into crystals : then pour it into your tray, with dry sticks fixed across, so as to be a little below the surface of the liquor ; set this by in a cool place, where it may stand until it shoots into clear transparent crystals : then gently pour off the liquor, and set the tray so as to drain it off perfectly dry.

Thus your salt-petre is completely made, and in a few days will be dry enough to remove out of your trays into casks or vessels proportioned to the quantities.

The liquor you last poured off must be again evaporated over the fire, for it will yield salt-petre equally good as the former ;

former ; and thus continue the operation, until all the watry particles are totally evaporated.

N. B. The earth from which you have extracted the salt-petre, and all the washings of your vessels, if you lay it by thinly spread, in your house, will turn to profit, as it continues to be peculiarly proper to attract and absorb the nitre floating in the air ; add also the earthy matter which settles in the refining : and should you be in want of house-room, you may spread it upon the earth, covered in the manner that fodder-stacks are : it will produce salt-petre, full as well as a tobacco-house, taking care that the north end be always open, and that it be defended as much as possible from rain.

NUMBER XI. /

To the Editors of the MUSEUM RUSTICUM.

GENTLEMEN,

ON reading your proposals, I determined to become your correspondent ; but it took me up some time to consider what should be the particular subject of my letter.

This may probably be the case with many others : I therefore concluded, that a few hours of my time would be well employed in removing this difficulty.

For this purpose, I herewith send you some *leading questions**, as I call them, for the use of your correspondents. They relate chiefly to agriculture, and will serve to guide many, who may be inclined to write to you, in the choice of a subject. I owe these questions, most of them at least, to a foreign tract.

Your humble servant,

Sept. 3, 1763.

N. K.

* We are under great obligations to this gentleman for his *questions*, as we could not ourselves have hit upon a more proper method of hinting to our correspondents the useful subjects we would wish them to write on. This work is partly intended as a channel of intelligence in matters of husbandry, commerce, &c. from one part of the British dominions to the other : we have reason, therefore, to hope that every useful method of practice, or new discovery, whether in agriculture, arts, manufactures, or commerce, will be communicated to us, in order to its being made known for the benefit of the community. O.

LEAD-

LEADING QUESTIONS IN AGRICULTURE.

Of Waste and Uncultivated Lands.

1. What quantity of uncultivated land is there in each of the several counties of England ?
2. Is none of this land fit for tillage, and what is it worth an acre ?
3. Might not such as is not proper for tillage be profitably planted with timber ?
4. What use is made of the mosses, morasses, or bogs, in the several parts of the kingdom where they are to be found ; and might not some machines be invented to lessen the expence of draining these bogs ?
5. Which is the best method of bringing a drained bog into tillage, and what crops is it best at first to sow on it ? What trees or plants thrive best in a moist situation ?
6. Which is the best method of planting timber trees, as oak, elm, ash, firs, pines, &c. and what culture do they require to forward their growth ?
7. Which is the most profitable method of felling brush-wood, under-wood, or spray ; and at how many years growth should the different kinds in different soils be cut ?
8. Which is the best method of cultivating timber for house and ship-building, and which is the best season and manner of felling the trees ?
9. By what cheap means can wood, particularly fir, be rendered less combustible ; and may it not by some preparation be preserved from decay and worms ?
10. Which is the best method of enclosing woods ?

Of Cultivated Lands.

1. What is the common price of plowed land, pasture, meadow, and woodland, in the several parts of the kingdom ?
2. What crop of wheat on an acre do the lands, on an average, bear in the several counties ?

Of Meadows and Pastures.

1. Which is the best method of managing up-land pastures ?

2. How

2. How are the several kinds of artificial pastures to be cultivated to the best advantage; and what kinds succeed best in the several sorts of soil? Which are easiest dried and made into hay for winter fodder; and what has been the result of several experiments made on this subject, under the various circumstances of soil, situation, &c.

3. Might not tares or grey peas be to advantage sown, to use either as green or dry fodder?

4. Which is the best method of flooding meadows?

5. How are low meadows to be managed, and which is the best method of improving them?

6. Which is the best method of preserving the grass, and destroying the weeds, in meadows and pastures?

7. In what manner are rough meadows and pastures best levelled?

8. What are the several methods of making hay, and which is the best?

9. What form is best for barns or hay-stacks?

10. In what manner can our winter and summer fodder be encreased; and how are we to guard against its bad qualities?

11. Which is the most profitable method in different circumstances of using fodder, green or dry?

12. What is the best manure for meadows and pastures; and at what season, and in what manner, is it to be laid on?

Of Lands in Tillage.

1. What is there peculiar in the methods of husbandry practised in each county?

2. Should not the land be in general plowed oftener and deeper?

3. In what proportion should the different kinds of manure be laid on various soils; and what manure is best adapted to each soil?

At what season, and in what manner, should manures be spread?

Which is the best method of collecting and preparing natural manures?

What effects have the different kinds of artificial manures, as ashes, foot, tanners bark, rags, pot-ash, &c. had on various soils; and what is the expence of making use of them?

When land is to be prepared for wheat, is it not a good practice to sow tares or buck wheat, and plow them in, when in full sap, as a manure?

4. Is burnbaiting or densthiring land of any use; and which is the cheapest way of doing it?

5. What composts are best adapted to each soil?

6. Which are, in the several parts of the kingdom, the best times for sowing the winter and spring corn? What method of sowing has succeeded best on various soils? At what depth is it best to lay the seed under the different circumstances of soil, situation, &c.?

7. In what parts are drill-plows used in England, and with what success?

8. Which is the best method of preparing seed wheat?

9. What sorts of grain are best adapted to the several soils and situations?

10. What is the best order of sowing the several kinds of grain in the same land?

11. Which is the best method of clearing our lands from weeds?

12. What are the precautions necessary to be taken in weeding wheat?

13. What remedies are best adapted to the distempers of wheat before it spindles?

14. What is the proportion, in the several counties, of the crops of grain, one sort compared with the others; and what is the proportion betwixt the prices of them?

15. What have been the crops of any particular field for any number of years successively?

16. Which is the most advantageous method of cutting and getting in grain at harvest?

17. What preparation does corn require in order to its being preserved for a length of time?

18. What construction is best for a granary, so as to keep corn in a small compass, and without danger?

In what manner can corn be best guarded against the ravages of insects, &c.?

19. What

19. What precautions are necessary to prevent our corn from degenerating, so as to have good seed corn? Is it best to buy the choicest at the markets, or to chuse the most perfect our own crops can yield?

20. Are there not some kinds of foreign grain, but little cultivated with us, that might to advantage be propagated in England, such as the Smyrna wheat, the bere or square barley, &c.? Would not even rice grow in some parts of the West of England?

Of Flax and Hemp.

1. Which is the best method of preparing land for flax or hemp; and might not the husbandry of these plants be improved?

2. What manure agrees best with these plants?

3. What proportion does the value of the crops bear to the expences of husbandry, &c.?

4. What is the best time of sowing flax, or hemp, in the several parts of Great-Britain and Ireland?

5. In what manner should these plants be managed whilst on the land?

6. What care is required in the pulling them; and should not hemp be pulled at two seasons, according to its sex?

7. What is the best method of dressing flax and hemp for the various purposes for which they are used?

8. In what manner could the culture of these useful plants be best encouraged?

9. Is it not best to sow foreign flax-seed?

Of Hedges and Fences.

1. Which is the most useful, convenient, lasting, and cheap fence?

2. Would not ditches only in some cases do?

3. Which is the best and speediest method of raising a good quick fence; and how are they best cut, plashed, and kept in order?

Of the Implements of Agriculture.

1. What are the different sorts of implements and utensils employed in the works of husbandry in each county?

2. What is the best form of borers to discover the quality and depth of the soil, &c.?
3. What kind of instrument is most useful for raising the turf of land, in order to its being burnt?
4. What are the best forms of plows, harrows, and other common instruments, regard being had to the soil they are to cultivate?
5. Might not new instruments be invented, or brought into use?
6. What proportions and constructions are best for carts, waggon, tumbrils, &c. used in carrying dung, gravel, earth, corn, or fodder?
7. In what manner might the drill-plow, by being made less complicated, be brought into general use?

Of Country Labour.

1. What is the price of the several kinds of labour in the several parts of the kingdom, by the day or the piece, proper regard being had to the distinctions of age, sex, strength, and abilities of the labourers, and the seasons of the year?
What alterations have there been in this matter, and owing to what causes?
2. In what manner might children of different ages be most profitably employed, so as not to hurt their growth and future health?
3. What wages are given, in the several parts of England, to plowmen, threshers, team-men, labourers, and household country servants?
4. At what times in every county are the several works in farming performed, such as sowing, plowing, manuring, &c.?
5. In what order should these works be performed, so as to be at the least expence of time and money?

Of Cattle.

1. What is the best form of stables, cow-houses, ox-stalls, covered sheep-pens, &c. regard being had to the convenience of situation, with respect to the dwelling-house,

house, &c. the saving trouble in attendance, the health of the cattle, the saving the dung, &c. &c.?

Of Horses.

1. In what manner could the breed of our horses, in some parts of the kingdom, be best improved?
2. How are the farmers to be prevented from spoiling young horses by putting them too soon to the collar?
3. What kind of fodder is best adapted to draught-horses?
4. To what particular disorders are horses subject in the several counties; and what are the causes of, and remedies for them?
5. What kind of geer or harness is best for draught-horses, so that they may use their strength to the greatest advantage?
6. In what manner should young horses be fed and trained to exercise, regard being had to what work they are intended for?

Of Oxen.

1. Might not our breed of black cattle in some counties be improved?
2. What is the proper age to put oxen to work?
3. What fodder is most proper to feed or fat them with; and which is the best and cheapest method of doing it?
4. In what manner can they be yoked, so as to use their strength to the greatest advantage?
5. What distempers are oxen usually subject to in the several counties, and what are their causes and remedies?
6. In what cases are horses or oxen to be preferred one to the other?
7. What number of horses or oxen are commonly put to one plow in different soils?

Of Cows.

1. How much milk do cows generally give in different places at a meal?
2. In what manner are cows managed at the different seasons of the year?
3. What kind of fodder makes them give the best milk, and most in quantity?

4. What

4. What are the distempers of cows, their causes and remedies ?

5. In what manner is butter and cheese made in the several counties of England ?

6. Have the farmers of Suffolk and Cambridgeshire any thing peculiar in their method of making butter ?

7. Have the farmers of Cheshire, Gloucestershire, Warwickshire, Lancashire, or Somersetsire, any peculiar way of making their respective sorts of cheese ?

8. What is the common price of those cheeses at the first hand, and at what fairs are they sold ?

9. Might not some at least of these cheeses be improved ?

Of Sheep, Goats, and Hogs.

1. Of what kind are the sheep bred in the several counties ?

2. What kind of pastures agree best with sheep ?

3. What are their distempers, the causes of them, and their remedies ?

4. Is not folding them on arable land a good custom ?

5. What is the best winter fodder for them ?

6. Which is the best method of shearing them ?

7. Under what restrictions may goats be admitted in a farm ?

8. How is the greatest advantage to be made of the wool and goat's hair ?

9. In what manner are hogs fed and fatted to the greatest advantage ?

10. Under what restrictions may they be permitted to graze in the fields ?

11. Might not some foreign breeds be with advantage introduced ?

Of the Poultry-Yard.

1. Which is the best method of breeding, feeding, and fattening fowls, turkeys, ducks, geese, &c. ?

2. Might not artificial ways of hatching fowls be with advantage practised ?

3. What are the distempers of poultry, the causes of them, and their remedies ?

4. How is the greatest advantage to be made of their feathers ?

Of

Of Fish.

1. Which is the best method of making fish-ponds, either for breeding or feeding?
2. In what manner might the fish in our rivers be better preserved and encreased?
3. How can the poaching in the ponds and rivers be best prevented?

Of Bees.*

1. Might not the number of bee-hives be to advantage encreased in many places?
2. Which is the best form for bee-hives?
3. What is the proper management of an apiary: and what is the best exposure for the hives?
4. How is the greatest advantage to be made of the honey and wax?

Of Silk-Worms†.

1. In what part of his majesty's dominions will white mulberry-trees thrive best? Have any experiments been made, and what has been the result of them?
2. What quantity of leaves have they produced in proportion to the extent of the plantation?
3. Which is the best method of planting mulberry-trees in different countries?
4. Might not some other plant be found out fit to feed silk-worms, at least for a time?
5. Which is the best method of breeding and feeding silk-worms? What are their distempers, the causes of them, and their respective remedies?

* We should be greatly obliged to any Gentleman who would from experience give us an account of the best method of managing bees: we imagine many apiaries have been established in consequence of the gold medals offered by the society. N.

† As our new acquisitions of East and West Florida are supposed to be particularly well adapted, by the temperature of the climate, to the breeding of silk-worms; we should be glad to have an account of the best method of managing them, from some gentleman settled in Georgia. N.

NUMBER XII.

A Letter to the Editors, recommending the Culture of Vines in our North-American Colonies.*

GENTLEMEN,

I Perceive by your printed proposals, which I received a few days ago, that any thing which can be of use to the public comes within your plan. I have long thought that good wine might be made on the continent of North-America : the extent of territory we possess there is amazing, and the diversity of climates such, that, in more than one of our colonies, vines may certainly with advantage be planted. I own it is to me astonishing, that none but partial and puffed-up trials have yet been made in this important matter, in that part of the world. A few vines have, it is true, been planted without success; but should that deter others from making a more rational trial? Experiments injudiciously made are the ruin of many good projects; people are apt to conclude that, if an undertaking fails of success in one man's hands, there is no reason to hope it will thrive any better, let who will attempt it. But this is, in truth, arguing preposterously; we should found our reasonings and conclusions on facts, or at least on probabilities: a trifling error in the execution of an experiment may occasion its not succeeding; therefore when we fail in our attempts, instead of giving up the undertaking, we should diligently search into the cause of the miscarriage. It is well known that a moist rich land is not proper for vines; yet on such kind of soils have vines been generally planted in America: is it then any wonder they should not succeed? Some have planted vines, and suffered them to run up the neighbouring trees; but little was to be expected from this method of planting them, as they could not enjoy the

* The patriotic society, of which the editors of this collection have the honour to be members, have had due attention to this important matter; and we hope, in a few years, to see the effects of the encouragement it has offered. N.

the full benefit of the sun-beams, and they were too much exposed to moisture, not only from the dews, but from the perspiration of the trees which supported them. Vines will grow and thrive almost in any dry soil, provided they have a good exposure. The south-eastern declivity of a hill is a proper situation for a vineyard, if the soil is light and dry. In such places (and many of them are to be found in our North-American colonies) should the vineyards I would have planted there, be made, there is no doubt of their succeeding and ripening their fruit, with proper management; and good vignerons might easily be procured, to instruct our planters, both from Germany and France.

It has, I know, been urged, that the grapes cultivated in America are very apt to burst before they are fully ripe; but this must either proceed from their having too much nourishment, or from the skins of the grapes being moistened by the damp vapour which proceeds from the neighbouring woods. I have known, when a cherry-tree in full vigour has been loaded with fine ripe fruit, that one night's rain has made all the fruit burst; moisture will often have this effect on most kinds of fruit, particularly on cherries, plums, &c. When we know the causes of a miscarriage in an attempt, we of course know how to guard against it for the future. I would earnestly recommend it to the planters in our several colonies, to try, with proper precautions, their success in planting vineyards: it would be easy for them to procure cuttings from the best vines which grow on the banks of the Rhine and Moselle: these would thrive well in Virginia, Pennsylvania, North-Carolina, New-York, and the province of Massachusetts; and able vignerons, for the purpose of dressing the vines, might probably be got, on moderate terms, from among the Germans settled at the back of Virginia and Pennsylvania; and if not, many in Germany would be glad to remove.

As to the southern colonies, Maryland, South-Carolina, Georgia, Florida, and Louisiana, I would recommend that cuttings from the Madeira vines be planted, and I should not in the least doubt of excellent wine being made from them. We might, in time perhaps, be able to make as

good wines of different sorts, as we are supplied with from the south of France*: and that this would be a great commercial object, I need not observe; how great could scarcely be computed. Frequent complaints are made, that our North-American colonies encroach on our manufactures: I have myself been informed, that they make very good hats there; and could we reasonably blame them, were they to make all the woollen and linen goods they could consume? The ballance of trade is already against them, and was it not for the lumber trade they carry on with the West-India islands, they could never make good their home contracts.

It is certainly our duty here in England, to give them all possible encouragement to set up such manufactories as will not interfere with our foreign trade; and it would be for our advantage, were they to supply us with such articles as we are obliged to fetch from France, Germany, &c. A great deal of money is annually carried out of the kingdom, to pay for French and German wines: why then should we not consult our interest as a nation, and encourage the growth of vines in America? Vineyards, it is true, cannot be planted without a large expence, and make no immediate returns: it is on this account I would recommend all possible encouragement to be given for planting them in that continent: one great temptation will be, that when once a vineyard is properly planted, it will, if duly attended, and carefully managed, last 150 years†, with-

* We agree with our correspondent, that it would be a very desirable object, if we could by any means in our American colonies make wines, that would approach in quality to those produced in the south of France: it is our importation of French wines, which throws the ballance of trade so much against us with that kingdom; and what is worse, it occasions a great intercourse of smuggling; by which means immense quantities of unmanufactured wool are annually exported. Was there no demand for French commodities in this kingdom, there would be no smuggling; for as much as the French want our wool, they would not suffer their bullion, or coin, to be exported to pay for it. N.

† In some parts of Italy they reckon a vineyard, which has not been planted 100 years, to be young. In Chianti, a vine
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without the wine produced from it being lowered in its quality. This is indeed an encouragement, such an encouragement, that I hope soon to hear of many vineyards being planted in that part of the world. Were the colonists in North-America to take to making wines, we should soon have them in great perfection from thence, and it would prevent their interfering with any of our English manufactures : on the contrary, the profits arising from the sale of their wines would enable them to purchase all their necessaries from England, which it is now out of their power to do : they are therefore obliged to make them at home. This is not the only advantage which would be derived to us from vines being planted and cultivated in North-America ; for they could in that case supply us with dried fruit for our home-consumption, which is annually imported in very large quantities from the Levant.

Both wine and fruit are bulky, and would consequently employ many thousand tons of shipping annually : this would be another great advantage, as it would necessarily encrease the number of our seamen : the small craft, in which the French wines are now imported, are of no consequence, being navigated by a very few hands. Wines imported from America would bear a reasonable duty, and it would be well paid, as it would be scarcely possible to carry on a smuggling trade thither ; and how much of this last-mentioned trade is carried on daily to the coasts of France, we all too well know. Was there no consumption of French wines in England, (and I see no reason why there should, if we could have as good from America) there would be no temptation for smuggling them into the kingdom : smugglers never import any thing that is not of ready sale, for obvious reasons.

I know but one way to encourage the planting of vineyards, and making wines in America ; which is, to grant a bounty on the first thousand pipes of good wine, which should be imported from any of our North-American colonies,

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nies,

of 100 years of age is accounted young : the vines there last above 300 years, and in other parts of Italy, commonly 140, or 150 years. A.

nies, being made from grapes which were the growth of those colonies. Suppose this bounty was to be 30 l. a pipe, I own, I should think 30,000 l. of the public money very well laid out in this manner, as in all probability there would be many competitors, and long before the thousand pipes were imported, there would be many vineyards planted, and in a way of producing annually plenty of excellent wine. The prospect of gain would probably tempt many ignorant persons to make experiments: I should imagine, therefore, it would be necessary to point out the particular kinds of grape most proper to be planted in each province, as well as the process they should pursue in making and managing their wines: this would in a manner ensure them success; and it is this, and this alone, which occasions the French wines of particular growths to be so good as they are. Were the peasants left to themselves, without being restrained by *Ordinances*, they would soon reduce them to a quality greatly inferior to what they are now of. Many other regulations would be requisite in this affair; but to mention them at present would seem ideal: I shall therefore conclude with assuring you that I am,

GENTLEMEN, Your most obedient servant,
A FRIEND to ENGLAND and
her COLONIES.

Sept. 1, 1763.

N U M B E R XIII.

A Letter to the Editors of the MUSEUM RUSTICUM, recommending a sure Method of curing Gravel-Walks, which, being in a shady Situation, are subject to breed Moss.

GENTLEMEN,

UNDER a notion of your admitting into your collection any thing really useful to the community, I trouble you with this letter. /

I have near my house a small grove, formed as it were for contemplation and retirement. Through this grove, in which I much delight, I some years ago caused several visioes to be cut, and for the greater convenience of walking
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in them in winter, I had them all laid with gravel, with the usual precaution of laying the bottoms with lime and brick-rubbish.

My walks are very much shaded by the trees on each side, and they were for several years, on this account, almost overgrown with moss. I knew very well that turning them in the spring would cure my walks; but as there were many of them, this work came to a great deal of money; so that in a year or two I was tired of it, though still desirous of enjoying the benefit of my grove.

After some days consideration on the subject, I was led to imagine that my walks might be cured by means of salt, as salt in a certain proportion is an enemy to vegetation, tho' greatly assistant to it in small quantities properly applied.

But a difficulty still occurred, for salt was so dear, on account of the heavy duty with which salt is loaded, that it would be too expensive to make the experiment.

This difficulty I at length got over: recollecting that I salted a great deal of meat in my family, I ordered my servants to pour into a barrel all the waste brine they had, instead of throwing it on the dunghill, which was the usual custom. When a sufficient quantity was collected, I added two parts of pond-water to one of the brine, and caused my walks to be well drenched with large watering-pots with this liquor*: I met with the success I expected; it killed the moss; but the brine being still too much impregnated with salt, it granulated with the heat of the sun, and formed a crust on the surface of the gravel: this, however, was soon dissipated by pouring on it some fresh water, in which no brine had been put. I afterwards mixed three parts of pond-water to one of brine, and this answered the intention very well.

Another advantage I found from brining my gravel-walks was, that it drove away the worms, which greatly infested

* This method of sprinkling gravel-walks with brine seems very likely to answer the purposes intended by our correspondent; but it does not appear to us so easy a matter to procure a sufficient quantity of brine, and salt is too dear to be made use of: where there are not many walks subject to moss, it may however be put in practice. H.

infested them. I imagined I had provided enough against worms, by laying the bottoms of the walks with brick and lime-rubbish; but herein I was deceived; for the gravel I used having a great mixture of loam, and being laid on very thick, the worms had room to harbour in it without being much affected by the lime which lay under it; and they liked their situation the better for the walks being shaded the greater part of the day, and being of course somewhat inclined to moisture.

Since I moistened my walks with brine, no weeds have grown on them; tho', for several years before, it was some expence to me to keep them clean weeded in the summer.

I now can walk with pleasure in my grove, either in summer or winter, my walks being incommoded neither by moss, weeds, nor worms.

Every autumn I cause them to be well moistened with the brine, during a whole week; and this I do to prevent their breeding moss in the winter; and again in the spring I have them moistened with the brine, for at least another week, to guard against weeds and worms, besides giving them a sprinkling every now and then in the summer season, when they seem to want it*.

I have practised this method now for four years, and find it answer every purpose I could wish from it.

Having met with so much success myself, and being able to lay my method before the public, by means of your collection, which, you say in your proposals, will make a speedy appearance, I should think myself to blame, did I not snatch the occasion.

You may doubtless have many matters of more real importance sent you for publication; yet, if a thing can be of any use at all, it should not be rejected.

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* We should have been much better satisfied, if this gentleman had informed us of the extent of his walks, and what quantity of the brine he used, also of what strength; *e. g.* whether it would bear an egg. If any of our readers have made experiments in this matter since the publication of the two first editions, we should be glad to hear from them, &c. E.

I sincerely wish you all imaginable success in your undertaking, as I cannot but be of opinion that your collection will, on many occasions, be a valuable *repertorium*; and as such, I shall endeavour to disperse it among my friends

I am,

GENTLEMEN,

Your very humble servant,

Aug. 25, 1763.

Z. Y.

NUMBER XIV.

A Letter to the Editors of the MUSEUM RUSTICUM, from a Member of the Society for encouraging Arts, &c. on some useful Discoveries lately made in France, viz. An improved Method of tinning Copper Vessels, and a new Metal nearly equal to Silver.

GENTLEMEN,

COPPER being so generally in use for making kitchen-utensils, the tinning of it in a proper manner was some years ago thought an object worthy the attention of the Society of Arts, Manufactures, &c. A premium was in consequence offered, which, if I mistake not, was gained by one Mr. *Bootie*, a brasier, who tinned a copper, capable of boiling thirty gallons, with pure grain tin, unmixed with any other extraneous adulterating matter. Vessels tinned in this manner are said to be fit for use much longer than those tinned in the ordinary way; but whether even this method might not be improved, is worth enquiry. Copper, when heated, emits vapours which are very noxious, and communicate their qualities to whatever happens to be in the vessels, if not tinned. This, which is certainly a sort of poison, occasions many disorders, and often death; it is no wonder therefore that, in Denmark, I think it is, the use of copper vessels in kitchens is prohibited: even in England many families make use, of late years, of iron saucepans. There is at present one *Vidal*, a brasier, at *Paris*, on the *Pont Marie*, who says he is possessed of a secret of tinning copper

copper vessels in a manner peculiar to himself: he calls it a new discovery, and says that the vessels tinned by him are not subject to verdegris, the metal he uses being so pure: he also asserts the metal to be so hard, that it will last in common use a very long time. As the tinning copper vessels in the best manner is a matter of such real and great importance, I should think the society of arts would merit the thanks of the public, did they send for some vessels tinned by *Vidal*, and compare them, by proper and impartial experiments, with those tinned by our countryman *Bootie*. If *Vidal's* turn out to be best, it will naturally shew that *Bootie's* method is capable of improvement, and point out to the society an object worthy of a handsome premium, to be given to the person who should find out a method of tinning copper vessels superior to that now practised by *Bootie*, and equal, or superior, to *Vidal's*. We cannot be too attentive in endeavouring to bring to the utmost perfection every thing whereon depend the health and lives of our countrymen. It is on this account I trouble you, that upon seeing my letter in your collection, some weighty member of the society may be induced to move, that several of *Vidal's* vessels be immediately sent for, to be examined in the manner above described; and if the examination turns out in *Vidal's* favour, that another motion, at a proper time, may be made for the premium above mentioned to be proposed by the society. I have still another matter to mention to you.

The Sieurs *Vidal*, father and son, *Desaubus* and *Ferrand*, undertook, the latter end of the year 1761, to compose a metal in imitation of silver, but without the least mixture of silver in its composition. They so far gained their point as to make this metal white through its whole substance, without smell, maleable, and not brittle. In June, 1762, this metal underwent many experiments in the presence of some members of the Royal Academy of Sciences, which approved of the composition.

These gentlemen afterwards obtained letters patent for the sole making and vending, for thirty years, any thing wrought in this metal, except drinking-vessels and kitchen utensils. This leads me to imagine, that the members of

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the Royal Academy, on their examination of it, found that it possessed some noxious qualities; or why might it not have been brought into use in kitchens? I would recommend to our London Society, to send for some of this composition to Paris, if it is not to be had in London, and let it pass a severe examination by repeated experiments. As soon as the parts it is composed of are discovered, it should be made public, and a large premium offered to any one who could make it in a certain degree more perfect. We might perhaps, by this means, attain a method of composing a metal little inferior, in point of utility at least, to silver; and if this metal could be divested entirely of all noxious qualities, it would, I should hope, soon be used in all our kitchens instead of copper.

I could wish I had known what was the value of the metal invented in Paris; but of this I own myself quite ignorant. If the composition, or the process to be used in making it, should be very expensive, it would by no means answer; though in this article we might perhaps also improve upon the French, by discovering a cheaper way of making it. We have here in England a sort of a substitute for silver, called French plate; but it is only brass silvered over, and that in no durable manner. It would perhaps be worth while for the society to offer a premium to the man who should discover a more perfect and durable method of silvering brass, than that now in Use. Excuse my manner; this is only a letter of loose hints.

I am, GENTLEMEN,

Your humble servant,

Sept. 4, 1763.

A BROTHER MEMBER.

NUMBER XV.

To the Editors of the MUSEUM RUSTICUM.

GENTLEMEN,

NOTHING could offer itself more seasonably than your collection, as a repository for a letter I some time ago wrote to Dr. Templeman, secretary to the Society

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of arts, containing a description of a new granary for preserving grain from decay or injury.

As it is my intention that this matter should be communicated to the public, I send you herewith a copy of that letter*, requesting you will give it a place in your first Number.

I expect much from your collection, or I should not send you this child of my invention.

I am, GENTLEMEN,

A——,
Sept. 26, 1763.

Your very humble servant,

P. H.

A Letter to Dr. Templeman, Secretary to the Society for the Encouragement of Arts, Manufactures, and Commerce, describing a new-invented Granary for preserving Grain.

S I R,

WHERE public utility is in question, a private apology becomes unnecessary: accept, therefore, without ceremony, the following hints to be laid before the Society.

I have long been of opinion, that a method of preserving grain from decay is much wanting; but it must be, to answer any good purpose, easy in its execution, and cheap in its process.

The method now practised, of laying wheat in a room or granary, and turning it frequently with shovels, and sometimes screening it, is subject to many inconveniencies: it must be laid very thin, or it is apt to ferment; and by being laid thin it takes up so much space, that to lay up and keep 500 quarters for three years only, would be considerably expensive.

Could we preserve our corn for a number of years, it would not only be of great service to the public, but of no small benefit to the farmers. For want of doing this, we find a great, and often a sudden, variation in the price of bread-corn: wheat will one year sell for 5l. a load, (that is, five quarters) and the next year it will rise to 14l. 15l. or even higher.

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* This gentleman's letter to Dr. Templeman was read before the Committee of Agriculture, on Monday, September 12, 1763.

The rents of lands are of late greatly risen, owing to the encrease of our trade; so is the price of all kinds of labour, insomuch that when wheat is low in price, the great farmers are considerable losers, and the poor ones are ruined: this is one reason why our lands are so much monopolised as they are in some counties. The great farmers, being rich, can afford to be losers for several successive years, as they are sure that once in a while the markets will rise, and not only repay all their losses, but secure them a large profit. The poor farmers are under a necessity of selling their corn before the winter is passed: if the markets are low, they fail in the payment of their Michaelmas rent, their stock is in consequence seized, and some over-grown monopoliser in the neighbourhood adds their little plot to the many formerly-separate farms he already holds.

Were the interest of the community to be consulted, no man should be allowed to rent above 300 acres of land *: the profits of such a farm will, with proper regulations, maintain a family decently and well; and it is not requisite, or even salutary, that farmers should acquire large fortunes.

But to return to my subject. Were a proper method projected for keeping wheat good for a number of years at a small expence, all this would be remedied, our lands would no longer be monopolized, and corn would from year to year vary very little in price. This stands to reason; for in a very plentiful year a farmer would not sell his corn too cheap, if he had the power in his hands to lay it up without great charges; and when the crops by any accident failed, the price of corn would not greatly rise upon the poor manufacturer and labourer, as what had been some years before laid up would now of course be sold at a reasonable price, and make up the deficiency, and this without loss to the farmer, and with great benefit to the community in general.

This interesting subject has, for many years, employed my thoughts and attention; and I have in consequence imagined,

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* We approve much of this gentleman's opinion, as we cannot but think that the suffering farms to be monopolised is a great and growing evil. N.

and even executed *in miniature*, or rather in small dimensions, a plan, which will, I have reason to think, answer the important purposes above mentioned: my whole plan consists in building a proper granary, (the construction of which will not cost much) which will keep corn for any number of years sound, sweet, and good, and that with very little annual expence.

I imagine the following *postulata* will be allowed.

If we can preserve corn from fermentation, it will be in a way of keeping.

To keep it from damp and moisture, is the best means of preserving it from fermenting.

To move it frequently, give it air at proper times, and separate the dust and other extraneous matter, is certainly the best way to keep it from being moist and damp.

Destructive insects are to be kept from it, which by frequent stirring is best effected.

I imagine there are few, who have made this part of nature their study, but will allow the above positions: I shall therefore, without farther prelude, inform you in what manner I effect this at a small expence.

The granary I would recommend consists of seven stories of floors, and may be built in any dimensions, provided proper proportions are adhered to.

The form of it is square; and I shall at present suppose it to be fourteen feet square within the rooms or cells; the distance of the floor from one cell to the floor of that above it is to be five feet: and the whole building should stand on strong posts, more or less in number according to its dimensions, at the distance of six feet from the ground: the small stairs, or rather ladder, to go to the several cells, must be fixed to the outside of the building side-ways, with a leading rail or rope to prevent falling.

The whole granary is to be built of what is generally called brick-noggin; that is, the whole is first framed in strong timber-work, and the interstices filled up with brick-work: the floors, beams, and joists, must be made strong to bear the weight of the corn; the inside of the
cells

cells must be well lined with dry oak-boards, close jointed, so as to leave no cracks; and the outside must be weather-boarded, the boards being strongly nailed to the timber-work of the frame, and afterwards payed over with pitch. The floors of the cells must be so contrived as to shelve towards the middle, in which part is to be an aperture six inches square, to be opened, or closed, by means of a sliding shutter, which must have a long handle reaching in a groove without the granary.

On three sides of the rooms there must be a window, strongly latticed, covered with wire to keep out larger insects and birds, and with strong shutters to defend the corn from the weather: on the fourth side is a door to each room to open from without: the windows are to be small, and as close as possible to the cieling: over the upper room or cell for the corn is a loft, on the outside of the door of which is fixed a crane to be worked within, by a winch and flyers.

The use of the windows in the sides of the rooms, is to give the corn all the benefit it can receive from the wind and fresh air: the door, when the cell is empty, gives the workmen entry to sweep, dust, and clean it*.

My method of managing my corn in this granary is as follows.

When my wheat is thrashed and cleaned, it is put up into sacks and carried to the granary: the apertures I mentioned above to have been contrived in the floor of the cells are then opened, except two, *viz.* one in the floor of the undermost cell, and that in the floor of the second cell, reckoning from the bottom.

The sacks are then craned up into the loft, and emptied, through a hole made for the purpose, into the uppermost cell, whence it falls through the apertures till it reaches the floor of the undermost cell but one, where it is stopped by that aperture being shut.

When this cell is filled to the height of about two feet from the floor, which may be seen through the lattices, the aperture

* We could wish our correspondent had given the public some account of the expence of building this granary in several dimensions. N.

aperture in the floor of the third cell is shut by means of the slider: the workmen then continue craning up the sacks till all the cells are filled in the like proportion, except the undermost, observing the proper opportunities of shutting the apertures.

In this condition the corn is left for a week, or somewhat longer, if it was got in very dry.

The first stirring it receives, occasions very little trouble: when it has been in the granary about a week, a workman, after having swept and cleaned the undermost cell, which was left empty, opens the aperture in the floor of the second cell, by drawing the slider back: this lets the corn fall from the second, into the undermost cell, the windows of which being open, the corn receives great benefit, as it falls, by the current of air that passes through the cell.

When the second cell is empty, the aperture in the floor of it is shut, and the workman, going in at the door, by means of the stairs on the outside of the granary, sweeps it and cleans it from all impurities, in order to prepare it for receiving the corn of the third cell, the aperture of which is next opened, and the floors being all made shelving towards the middle, the corn falls gradually through, in the same manner it did from the second to the undermost cell.

In this manner they are all managed, till at last the uppermost cell remains empty.

It is then left for another week, when two workmen must for a small space of time be employed: one of them goes up into the loft at the top of the granary, to work the crane, and the other takes his station on the ground under the floor of the undermost cell: under the aperture in this floor he first fixes a screen, upon which the corn falls, and then, by means of a conductor at the foot of the screen, drops into the mouth of a sack which hangs to it, the bottom of the sack resting on a miller's hand-barrow: when all is prepared, he draws away the slider, and lets the corn fall on the screen.

When the sack is full, the slider is for a moment closed, till another sack, on another barrow, is put under the conductor:

conductor: the workman then wheels the first sack to the outside of the granary, and fastening the crane-rope to it, makes the signal for the other to draw it up. Whilst this is doing, the second sack is filled, which is wheeled and drawn up in the same manner; and this method is pursued till the undermost cell is empty.

If it is necessary to screen all the corn at this time, a small screen is fixed under the aperture of the second cell, so contrived as to have a box at the back of it, which receives all the dust, trash, off corn, and seeds of weeds that pass through the wires; and this screen is successively fixed under every aperture, as the cells are successively emptied.

After the first month the corn need be stirred in this manner only once a fortnight, and after the first six months, only once a month, unless the weather should prove, in autumn, very hot and damp.

This then, Sir, is the manner in which I have for some years managed my wheat, and find it answers very well, the vegetative quality of the corn being preserved in full vigour, and no signs being discoverable in it of a tendency to fermentation.

My country hovel is at some distance from London, in a retired quarter, consequently unnoticed; and there being but little probability of this easy method's being sufficiently known by my practising it, is the reason of my troubling you with this long letter, flattering myself that by your means it may make a proper appearance in public. Had vanity been my predominant passion, I might have presented it to the society in person, which as a member I had an undoubted right to do; but this would have been encroaching on my beloved obscurity: to you, therefore, Sir, do I trust this child of my invention; and if in your hands he can be trained so as to be of public utility to my country, my every purpose is fully answered.

I forgot to observe, that I have lately seen Mons. du Hamel's methods of preserving grain, by means of chests with false bottoms and ventilators*.

This

* For Mons. du Hamel's method of preserving corn, see his *Conservation des Grains*, and his *Elemens d'Agriculture*, lately published in Paris, and now translated into English. N.

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This method may in some cases be of service, I allow; but I am nevertheless of opinion, that corn cannot be properly preserved, unless the whole bulk of it be frequently stirred, which by du Hamel's method is not done: could the current of air be equally distributed over the whole chests, and in due proportion, I should still think it insufficient to preserve the corn; and if corn has been kept for some time in that manner, I should rather be apt to attribute it to Mons. du Hamel's first drying it on a kiln, before he puts it into the chests, than to any regular effect of the ventilators.

Were I acquainted with this gentleman, I would recommend it to him, to make an experiment of his method in the following manner.

Let him first fill a chest with dry corn that has not been on the kiln: another chest should be filled with some that had been well dried, and a third with the same dried corn: let the first and second chests, at proper intervals, be ventilated, and the third be kept without ventilating, in a dry place. Were this done, I am apt to think, that after six months, or a longer time, there would not be found so great a difference as some may imagine, betwixt the corn which was, and that which was not, ventilated.

In my method, the expence, as well as hazard of drying is avoided, it being never necessary, unless when corn is got in very soft, in a wet harvest; and then a common malt-kiln answers the purpose very well.

I should have mentioned, that in my method of preserving corn, when by frequent stirrings it is become hard and brittle, it may be laid to the height of three feet, on the floors of the cells, without any danger of damage ensuing; for when it is hard, it is not subject to heat and ferment; neither are insects so fond of attacking it*.

I have by this time, perhaps, tired your attention, and to be plain, am not unwearied myself; shall therefore conclude with assuring you that I am, SIR,

Your very humble servant,

A MEMBER of the SOCIETY.

* We should be obliged to this gentleman for his future favours, N.

Museum Rusticum, &c.

For OCTOBER, 1763.

The THIRD EDITION, revised and corrected by the Editors
with several ADDITIONAL NOTES.

NUMBER XVI.

To the Editors of the MUSEUM RUSTICUM.

GENTLEMEN,

I Send you inclosed, for your collection, a letter I some years ago received from a worthy friend. It relates to the culture and management of early tulips. I suppose gardening comes within your plan, as being a branch of agriculture.

I have raised some fine tulips in the manner recommended by Mr. Simmonds, and had no despicable shew of flowers this last spring. However, I seldom plant my roots above four inches deep at most: but then, if hard frosts come on, it will be necessary to cover the beds for a time with peashaulm, or some such matter, lest they should thereby be destroyed.

With regard to the compost-earth, I find, both by information and experience, that any thing, which will bring the mould or fresh earth to a proper state of poverty, answers the purpose as well as brick or lime-rubbish; and that the longer the compost lies in a heap, to mellow and blend its parts together, the better, provided it is frequently turned.

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Living

Living in an inland county, I found myself at first greatly at a loss for sea-sand: this difficulty, however, did not long embarrass me; for I had some fine pit-sand dung, and after being screened, made the labourers lay it in a large heap, on which I ordered all the brine and urine that was made in my family to be poured. I had the heap often turned, and as I had occasion, took what I wanted of it to mix with my compost, finding it answer, as a *succedaneum* to sea-sand, to admiration.

I have at present only to add that I am,

GENTLEMEN,

July 31, 1763.

Yours, &c.

*Copy of a Letter from the Reverend Mr. Simmonds, to Dr. ***** of B——, relative to the Management of early-blowing Tulips.*

S I R,

YOU think my tulips blow early, and preserve their beauty a long time: for this reason you wish me to give you a few hints relative to my management of them.

These, Sir, you are very welcome to; and I make not the least doubt but you will soon have as fine a show of flowers as ever I could boast of.

The soil of my beds is a light porous earth, with which I mix some peat, dug in a neighbouring moss; and throwing it into a large heap, I let it lie for some months till the peat is well rotted; after which I get the heap turned and mixed: when I use it for making the flower-beds, I mix it with one eighth part of sea-sand, and one-eighth of brick-rubbish which has been laid in a road, to be ground to dust by the waggon-wheels*.

I plant

* Mr. Miller says, the best compost-earth for these roots is a third part of fresh earth from a good pasture, which should have the sward rotted with it; a third part of sea-sand, and the other part sifted lime-rubbish: these should be all mixed together six or eight months at least before it is used, and should be frequently turned, in order to mix the parts well together: with this mixture the beds should be made about two feet deep. Mr. Simmonds

I plant my roots sooner than most people do; that is, the latter end of August; and my borders, though sheltered from the northern and eastern winds, are still free to the access of the air.

I always keep my beds free from weeds, and suffer as few flowers as possible to be gathered; by which means my roots attain their full strength and vigour.

In the spring I keep my beds for some weeks covered with mats; but they lie hollow, so as to admit of a free current of air between the earth and the mat, as it is not so much to keep off the cold air, as to hinder the roots from being backened in the growth by the perpendicular chilling frosts.

When my tulips are in flower, I shade them with the moveable blinds you saw, from the intense heat of the mid-day sun; by which management they preserve their beauty a long time.

In taking up my roots I am particularly careful that they be not either bruised or injured: I dry them in the shade, and that very gradually, turning them very often; when they are thoroughly dry, I have them carefully rubbed with a soft brush, to take off the dust from them, which might otherwise be a harbour to insects or their eggs: when they are thus prepared, I put them into paper bags, which I hang up in my library, where they are kept very dry till the next season for planting comes.

I should have mentioned also, that I am very nice in having the earth, with which I make my beds, carefully screened to take out all the stones; for I find by experience, that if a tulip-shoot meets with a stone in its passage to the surface, its progress is not only retarded, but the flower is injured, and does not last so long as the others.

M 2

Some-

monds uses only one-eighth part sea-sand, and another eighth of brick-rubbish, making one-fourth part of the compost; whereas, in Mr. Miller's method, the sea-sand and lime-rubbish make two-thirds of the whole: and this is a great difference; but we suppose the light porous earth, mentioned by Mr. Simmonds, was much poorer in its nature than the fresh earth from a good pasture, recommended by Mr. Miller, therefore required a smaller quantity of extraneous mixture to impoverish it. N.

Sometimes, instead of the brick-rubbish, mentioned above, I mix with my prepared earth lime-rubbish for variety, and find it does very well.

I plant my roots about five inches deep, following in that respect the directions given by Mr. Miller* in his Gardener's Dictionary, where he treats of early-blowing tulips; thinking this by much the best method; as the roots are sure to be in a proper position against they make their shoots in the spring; consequently, finding less resistance, they must of course blow earlier than flowers of the same kind planted in the ordinary method with a blunt dibble.

Believe me, SIR,

Your very humble and obliged servant,

June 3, 1750.

R. W. SIMMONDS.

NUMBER XVII.

A Letter from a Member of the Society of Arts, &c. to the Editors of the MUSEUM RUSTICUM relative to an easy Method of forwarding the Ripening of Grapes in England.

GENTLEMEN,

I HAVE read your first publication, which has, I assure you, given me much satisfaction. I am not a little pleased to find, that a channel is opened through which the lovers of agriculture may convey their thoughts to the public,

* Mr. Miller directs tulip-beds to be made in the following manner. After the old earth is taken from out of the bed to the depth intended, then some of the fresh earth should be put in about eighteen inches thick: this should be levelled exactly, and then lines drawn each way of the bed chequer-wise: at six inches distance, upon the center of each cross, should be placed the tulip-roots, in an upright position; and after having finished the bed in this manner, the earth must be filled in, so as to raise the bed six or eight inches higher, observing, in doing this, not to displace any of the roots, and also to lay the top of the beds a little rounding to throw off the water. We must, however, remember, that this is meant of tulips in general; for in another place this writer mentions, that ten inches depth of earth is sufficient for the roots of early-blowing tulips, which need not be planted more than four or five inches deep at most. N.

lic, with so little trouble to themselves: this, Gentlemen, has prompted me to become your correspondent, and engaged me to relate to you an experiment I made some weeks ago on some vines in my garden.

I am apt to think that very good wines might be made in England *, as our climate differs very little from some parts of France. There certainly were formerly many vineyards in this island; for there is at this time scarcely a gentleman's seat in the south or west of England, but what has near it a spot of ground or field which goes under the denomination of *the vineyard*; and scarcely an abbey, monastery, priory, or nunnery, but what had a *vineyard*: by this it is evident, that much wine was in those times made here.

What has been once done may certainly be done again: why then should not we attempt it again, especially when there is so great a probability of success? I know it will be urged, that it would answer no good purpose to make wines in England, when we can have them so cheap from France and Portugal; but surely it would be worth while to save, by any means, the immense sums which annually go to France for this commodity.

At Arundel castle in Suffex, a seat of his grace the duke of Norfolk's, a noble vineyard was some years ago planted; it has succeeded, and annually yields considerable quantities of wine: there are at this time in his grace's cellar at Arundel, as I have been informed, above sixty pipes of excellent Burgundy.

This wine is not, it is true, of quite so fine a flavour as the wines of *Beaune*; yet does it much exceed quantities of
Bur-

* The difficulty of making good wine in England would not, perhaps, so much arise from the coldness of the climate, as from the want of knowledge in the methods of managing the liquor in the vat, when it is run from the press. The best wines of France require great art, acquired by long experience, to be used before they are brought to their perfection of flavour: and what is still a greater obstacle is, that the liquor yielded by one sort of grape in one vineyard, requires quite a different management from what is produced by another; so that often one *vigneron* knows how to manage one vineyard only, and that knowledge is so far a kind of instinct in him, that he cannot impart it. N.

Burgundy wine annually imported into England *, and most of what is consumed in common in France. Whatever defect there may be in the Arundel-castle Burgundy, is certainly not to be attributed to any other cause but the vines being so lately planted: they are not come yet to a proper state to yield wine in its utmost degree of perfection.

Should this vineyard continue to be properly managed, and taken good care of till it is thirty or thirty-five years old, it will be found to yield as good wine as perhaps even those of *Beaune* †.

But to return to the first intention of my writing, which was to relate an experiment I made some weeks ago, I must take notice that my vines grow against two walls, one of which faces the south-east, the other the south-west.

I need not tell you that the present season has been very unfavourable to vines: the cold rains for some weeks past have prevented the fruit from ripening so well as it should do,

* It is not at all surprising that his grace of Norfolk's wine, made at Arundel, should not be equal to the best French Burgundy wines brought hither. It is well known, that the best wines made in France, as well claret and Champaign as Burgundy, find their way to England: we cannot, therefore, expect that so good wine should be produced from a single vineyard, as from the choice of a whole province. We can scarcely flatter ourselves, that vineyards will ever again be planted with any success in England; the English are, in general, of too impatient a nature, to wait thirty-five or forty years till their vines are so far come to perfection, as to yield them rich high-flavoured wines: the expence would be very great, as the vines must be annually pruned and well attended to all the time; though probably for many years they may not pay the charges of doing it. The rich are too much dissipated to think in general of such improvements, and the poor are not able, were they industrious enough, to make such expensive experiments. A.

† The editors would be very much obliged to any gentleman who would take the trouble of sending them some account of the planting the vineyard at Arundel castle, and inform them what extent of ground it covers, what is the nature of the soil, in what exposure it is, how much wine is made from it in a season, in what particular manner the vines are managed, and whether any French method of pressing and fermenting them is used there. Were these queries answered, it would greatly elucidate the subject of our correspondent's letter: perhaps he is himself capable of giving satisfaction in these points. N.

do, infomuch that many grapes withered without coming to any degree of perfection.

The weather alone was then a great disadvantage to this fruit; but this was not my only misfortune; for by an unaccountable neglect my vines were never checked in the spring, nor pruned, nor nailed, during the fore-part of the summer; so that when I came to my house, the beginning of August, with an intent to pass a few months there before the parliament sat, I found them in great disorder; the walls were over-run by long dangling shoots; and the grapes on the little bunches were very small, and almost as hard as bullets: I despaired of eating a ripe bunch this season, but was, however, afterwards agreeably disappointed.

My first step was to get a new gardener, who, on the 5th of August, by my orders, pinched off all the long trailing branches, as well as the ends of the bearers a little above the bunches, and nailed the vines up close to the walls where it was necessary. The walls now made but an indifferent figure: there were, it is true, plenty of fruit on them, but it was very small, and no great probability of its ever ripening, for it was too much exposed; and I expected the skins would be rendered hard and tough by the sun, before the fruit had attained its full growth: the leaves of the vines were uncommonly small, and many of them turned the wrong way.

In this situation, I say, were my vines after pruning and nailing; but there was in a few days an alteration for the better. The weather continued cloudy and covered, the leaves resumed their proper position, and the grapes encreased in size amazingly, infomuch that at the end of the month they were to the full as forward as those of my neighbours, who had kept their vines in excellent order. I had still, however, the backwardness of the season to encounter; for my vines were so full of sap, and supplied the fruit with so much nourishment, that there was no probability of its assuming a disposition to ripen.

I found it was necessary to check the course of the sap out of the bearing branches into the bunches of fruit, as, whilst the sap flowed faster into the fruit than it could be evaporated by transpiration, the grapes could not ripen; for the

cause of the ripening of fruit is certainly owing to a check the motion of the sap receives from the heat of the sun, by which means the transpiration gets a-head, the superfluous moisture is extracted, and the fruit is brought to the verge of fermentation, that is, to maturity.

On this principle I visited my vines on the 14th day of last month, and taking with me a sharp pruning-knife, I cut the stalks of a large number of bunches of grapes half through, and left the rest untouched. Though I did this with great care, yet many of the bunches were cut too far, so that they had not stalk enough left to keep them suspended: these then I cut quite off, and stopping the end of the stalk with sealing-wax, hung them on the branches to see what effect the sun would have on them *.

I am now to tell you, that the experiment succeeded for the most part very well: the bunches of fruit which were full grown at the time the stalks were half cut through all ripened, and had as good a flavour as they could be expected to have in so different a season.

The grapes which were not full grown came indeed to some degree of maturity: but they had a sour subastringent taste, owing, I suppose, to the juices not having acquired a proper quality before the superfluous moisture was exhaled by the transpiration.

As to the bunches, the stalks of which I had sealed, they came to little: some few of them, it is true, ripened; but they were no ways to be compared, in flavour, to such as had their stalks half cut through. Some few of these latter are now hanging on my vines, and being rather more backward than the rest, will be fit for gathering in a few days.

As to those bunches which did not undergo this operation, not one in a hundred of them are come so far to maturity as to be eatable; neither is there any probability of their ripening

* This method of stopping the ends of the stalks of bunches of grapes has been often practised, with this difference, that it was done when they were full ripe, with an intention of preserving them some part of the winter. If they are carefully hung up in a dry warm place, it often answers, and they keep well and sound. N.

ing this season, they being still hard, under-sized, and very sour, with somewhat of a woody, disagreeable, crude taste.

The grapes which grew on the vines in a south-western exposure, ripened sooner than those which had the benefit of the south-eastern sun, though of the same kind.

I do not claim any particular merit in having made this experiment *; it is often with great advantage practised by the curious vigneron in the south of France, and is found to give a flavour peculiarly fine to the wine.

I own I should be glad to see vineyards restored to England, and am apt to imagine they might succeed well.

It is my intention, God willing, to try this experiment in a more accurate manner next autumn, when I shall probably be able to account for some *Phænomena*, which, as they at present puzzle me, I shall forbear mentioning.

In any country where vines are cultivated, this method may with advantage be used; and, if I conjecture right, it would bring the grapes at least a fortnight sooner to a state of maturity: this is no small advantage, as, in the more northern countries, the vintage would, by that means, be over before the autumnal rains came on.

It is a mistaken notion, that vines will thrive in none but very hot countries: this is so far from being true, that in very hot countries they will scarcely thrive at all; for instance, nothing can be more difficult than to procure good grapes in Jamaica; and they are accordingly seldom to be met with there, unless it is now and then up in the mountains in the centre of the island, where the climate is many degrees colder than that of the sea-coasts and savannah country.

So far is such extreme heat from being necessary to grapes, that even frost is often known to meliorate them and im-

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prove

* If this experiment should answer so well, as it seems to have done with this gentleman, on farther trials, it will doubtless be of use, and may, perhaps to advantage, be practised on other fruits as well as grapes. We recommend it to the curious to try next year what effect an operation of the like nature will have on the lattered peaches; it may, perhaps, bring them so forward as to secure their ripening constantly in our climates, which now in unfavourable seasons they do not. N.

prove their quality, insomuch that in some parts of Orleans in France, where they make the fine Muscat wines, they suffer the grapes to hang, not only till they are half rotten*, but till the frost catches them; sometimes deferring the gathering them till the middle of November, when the icicles hang upon many of the bunches; and they are obliged to carry charcoal fires into the vineyards to warm the fingers of the gatherers. It may, perhaps, be imagined, that this rottenness of the grapes would have a bad effect on the wines; but the contrary is the fact; they are of a much higher flavour, and sell at a higher price, though the grapes yield less in quantity of liquor. The only danger is in the grapes from which white wines are made: if the rottenness affects those grapes before they are thoroughly ripe, the colour of the wine is apt to turn yellowish.

If what I have said is true, there can be no doubt but that fine grapes might be cultivated in England, and probably good wines be made from them. Our summers are in general long enough, and warm enough, to ripen them; nothing is to be dreaded from the approach of winter; and if by chance we should at any time have a backward season, the ripening of the fruit may be hastened by the practice above recommended, *viz.* cutting the stalks of the bunches half through, about three weeks before the vintage.

Had I entertained any thoughts of laying this experiment before the public, I might, it is possible, have been more accurate in my observations: such as they are, they may, perhaps, induce some other lovers of nature to make the experiment

* Something like this is sometimes practised in the cyder counties in England, where the farmers lay their apples in a heap, when they are gathered, in the orchard, and suffer them to remain there till they heat, and many of them rot, before they offer to carry them to the press: they say this makes the cyder mellow, though they have less of it. We have heard of a farmer who came to live in a county where this practice was not known. Seeing his neighbours throw away all their rotten apples, he offered to buy them at a very low rate, and mixed them with his own crop, pressing them all together. His neighbours laughed at his folly, as they termed it; but their mirth turned to envy, when they afterwards found that his cyder was by far better, and fetched a better price, than any they had ever made. A.

periment next autumn: and it is to be hoped they will join with me in determining to communicate to you whatever observations are made on the subject, as it is far from being improbable but some useful deductions may be made from them, and some improved methods of practice established.

Reason and experience warrant what I recommend: should not therefore my method be adopted, I cannot surely be blamed for endeavouring to propagate the knowledge of it.

I am, GENTLEMEN,

Your most obedient servant,

O^ct. 5, 1763.

AN OLD MEMBER of the SOCIETY
of ARTS, &c.

N U M B E R XVIII.

A Letter from Mr. John Irwin to the Editors, on the Nature of the Lime-Stone, used as a Manure in the County of Roscommon in Ireland, &c. &c.

GENTLEMEN,

A Letter I had the pleasure of writing to a particular friend of mine last June, on the culture of flax in that part of Ireland where I live, I observe, has a place in your collection.

Had I imagined any feeble efforts that come from me would be thus far honoured, I should have endeavoured to dress them up in a more perfect manner: not but that, in the form in which they now appear, you have done me ample justice; so much so, that it will be an encouragement to me to venture communicating to the public, from time to time, through the channel of your *Museum Rusticum*, (a work, which, from the first specimen of it I have seen, will probably be of the utmost utility to all land-holders) whatever new or useful occurs to me from my own practice in husbandry *.

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* We are greatly obliged to Mr. Irwin for his attention to our requests, and hope often to hear from him; particularly on the two subjects he mentions in this letter, viz. the culture of potatoes and bere, as now practised in Ireland. N.

And I shall hope to be the more acceptable, as I shall probably march in a more unbeaten track than any other of your correspondents; that of treating of the agriculture of a country which has produced few writers on the subject, where, however, the science is much admired, but as yet badly practised.

Our Irish farmers have not the liberal notions yours in England have. If they know any thing worth communicating, they are not in haste to impart it, being over greedy for profit, and too much taken up with good living. However, the constant informations from our public societies, formed in the kingdom, and the great number of premiums they give, supply this deficiency: yet is this tenaciousness of their experimental knowledge one of the chief causes why so little is wrote by the Irish farmers, which otherwise might be of great use to their countrymen, and of considerable assistance to their brother farmers here.

In your notes * on my letter, you are pleased to call upon me to explain some particulars. This I intended doing, among other matters, in some subsequent letters to my before-mentioned friend, who is a great lover of agriculture: but as you obligingly invite me to a place in your monthly compilation, I dare say he will be as well pleased to have my thoughts on this subject communicated to him from thence, as directly from myself.

Lime-stone gravel is the common manure in the greatest part of Ireland; and of all manures I believe there is the least difference in its qualities.

That about my place †, and indeed all over that part of the country, is a small round lime-stone pebble, of a hot nature, generally mixed with a fat, clayey, or loamy earth; for even in the summer time, in digging, it comes up in clods: it is found almost always immediately under the stratum next the turf, which consists of the fat earth or generative soil; in some places, however, they are obliged to dig deeper for it. There is another sort, less clayey, used for the highways: little of this sort is to be had immediately about me; consequently the roads would be very bad, were it not that

* See the notes to pages 8 and 13. † Oran, near Roscommon,

that we are obliged to dig deep for a poorer or more starved kind, or to fetch it from a good distance.

The nature of the manuring lime-stone gravel is so powerful, that I have, with my own hands, separated the pebbles from the clay with which they were mixed, and spread them on a ley spot of ground, close eat down, towards the end of autumn, when the force of vegetation is near exhausted; and in less than a month I have observed an amazing growth of grass, of a most pleasing dark-green verdure, to issue from all sides of them.

This experiment *, simple as it is, has ever since satisfied me of the necessity, when ley-land is sanded (as we term it), of letting the sand lie on the turf or surface for at least a year; for it will require a little less space of time to imbibe its virtue. I caused this to be done, and my land stood me great proof when I came to work it. But more on this hereafter, when I write to you on the articles of potatoes and bere.

We

* It were much to be wished, that every land-holder would be as cautious and prudent in this respect as Mr. Irwin was. Before any new manure is laid on land, it should always be tried in various proportions on small plots; marle, in particular, should ever undergo this previous trial: our farmers would not then so often exclaim against their crops failing after their land was well manured. Great nicety is required in marling; it is very difficult to determine the precise quantity which ought to be laid on, as this depends not only on the nature of the soil, but the quality of the marle. Some marles agree very well with particular soils, but are fit for no other; they should all therefore be tried first. The remarks we have just made on marles may be applied to all kinds of manure, particularly such as are fossil. We do not remember to have seen in England any lime-stone so strongly impregnated with fertilising qualities, as that described by Mr. Irwin. Monsieur Du Hamel, in a late publication, says, that several years ago some masons fashioned some blocks of hard marble on a grass-plat: when they had done their work, the servants were ordered to pick up all the fragments they could find, and sweep the grass clean: this was accordingly done: yet, from the dust and very small pieces which remained, the grass in that spot received such an addition of vigour, that it was with the utmost difficulty it could, by frequent mowing, be kept to a good turf. If marble has such qualities, what may we not expect from stones of the same nature, though of a softer and looser texture? N.

We generally dig our sand out of pits made, or that ought to be made, in ditches; because, when they are made in the open fields, the poor, who are the operators of this business, too often neglect closing them up; so that they disfigure our pastures, and are, in snowy weather, dangerous traps for our cattle to fall in.

They oftentimes let the sand lie too long on the banks, which I don't esteem the best way, as it must thereby, being long exposed to the air, lose much of its nitrous or fertilising quality; whereas fresh spread on, the earth imbibes it all.

It is commonly laid on the land in loads, set down at small computed distances: these loads are carried in baskets fixed on slide-cars* (cars without wheels) drawn by one horse: each load may contain about one barrel and a half † of Winchester measure, and about a hundred load to an acre of ley-land, to do it proper justice.

It must be observed, your acre differs from ours, as about sixteen and half does from twenty-one; so that ours requires the more.

The poor people are also very apt to let the sand lie too long in heaps on the field before they spread it, which, in my opinion, abates the force of it; but they seldom enter into, or consider, natural causes: however, it is amazing how one of them will tell at first sight the difference of the present condition of land, what sort of tillage it is fit for, and how long it will hold. In this the more sensible of them are very good advisers; and many of them are exceedingly intelligent in the choice and feeding of cattle and curing them; yet they are so wedded to old customs, that they are a great hindrance to the improvements in farming, which ought to be nearly on the same footing there as here.

Before I finish this subject, I must observe to you, that the quality of the lime-~~stone~~ manuring gravel is so strong and meliorating, that when there is a sufficient quantity laid on, it enables the land to bear many years tillage without detriment to it, and afterwards to come speedily to a good skin (as we term it), or coat of grass; whereas the same land, with

* A sort of sledges. † Much about six bushels.

with artificial manures *, unless often repeated, would neither work so long and so well, nor come to a coat of grass near so soon.

Some spots of land about me are so rich, that people think it needless to gravel them previous to their being tilled; but I am certain, from the observations I have made on the soil many miles about me, that in prudence no farmer ought to turn up any of it without first sanding it a year before, even though he should have plenty of artificial manures convenient. The sanding does not impede the use of these, which, if laid on after it, so as to make the land over rich, the judicious farmer, profitably to himself, will find articles † to sow in it which will draw it sufficiently, so as to render it fitting for any purpose he may require.

Thus, without sanding, artificial manures will meliorate our lands for a few seasons, but will never enable them to stand, wearing and coming to grass soon after, without being first of all properly gravelled ‡.

In Ireland, almost every family in the country, as you mention in your note §, manufacturers their own linen, especially diaper, sheeting, and all the inferior kind: they also make pieces of linen for shirts, shifts, &c. but in this they do not succeed near so well as in the other sorts: they cannot equal that, at least to appearance, which is made up and lapped in the province of Ulster for public sale.

The ladies, it is true, who are the sole conductors of this branch, take infinite pains, endeavouring to outdo each other, by getting the yarn spun to a great fineness, and having it wove by the best weavers; still they cannot make it up so beautifully as the northern people do, not having the same methods: they boast, however, that theirs wears better; but I have tried both, and could not find it so. Certain I am, that
the

* Such as yard-dung, foot, ashes, tanners bark, &c. &c.

† When land is too rich in England for wheat, it is no uncommon thing to sow oats as a first crop, to abate its rankness; and this generally answers the intention. Wheat in this case is apt to lodge, on account of the unnatural length of the straw. N.

‡ We must remark, that Mr. Irwin uses the words *sanding* and *graveling* in the same sense, both signifying the laying a certain quantity of lime stone on the land. N.

§ See note, page 13.

the linen made up for sale looks, in the wearing, infinitely the best; and I have made some myself of a tolerable good kind, to which I could wish, for the honour of my province, to give the preference; but it would not admit of it, so that the truth is best told *.

Of my fine tow † (which you desire to be informed about) I made breakfast-cloths, napkins, and towels, which, though I destined for common use only, might serve, with the greatest credit and decency, at our country merry-makings, and which, without any boasting, have been far superior to the linen I have often seen on the king of France's table.

Of the inferior sorts of tow I have made excellent ticking and huckabacks.

Of the worst, or rather coarser sort of all, our corn-sacks and wool-packs are made.

Accept for the present these few observations, which shall be more fully illustrated hereafter under their proper respective heads, as I should be desirous to have it in my power to contribute, though in the smallest degree, to your collection, which, if continued, must be of infinite service to the community; and from which I expect to draw many useful lessons for my own conduct in husbandry, so far as I am concerned in it, being as yet a renter but of between four and five hundred acres of land, which, in that country, is reckoned no considerable undertaking.

I am, GENTLEMEN,

Your very obedient servant,

London, Oct. 3, 1763.

JOHN IRWIN.

* It is not at all wonderful that Mr. Irwin, even with his finest yarn, should not be able to make as good linen as they make in the province of Ulster, where this is a staple manufacture; for the weavers, bleachers, &c. are always most expert where most business is done: in the county of Roscommon, where Mr. Irwin lives, very little linen is made for sale. O.

† For the better understanding this whole letter, we must refer our readers to a letter written by this same gentleman, and already inserted in our collection. It is marked Number II. N.

NUMBER XIX.

To the Editors of the MUSEUM RUSTICUM.

GENTLEMEN,

IF you deem the inclosed, which I sent some time ago to Dr. Templeman, secretary to the Society for the encouragement of arts, worthy of publication, you have my consent to print it in your collection.

I am, GENTLEMEN,

London, Oct. 5, 1763.

Yours, &c. * *.

*To Dr. TEMPLEMAN *.*

S I R,

AS the patriotic Society for encouraging arts, manufactures, and commerce, is open to the correspondence of every well-wisher to the common weal, it will be, I presume, a sufficient excuse for troubling you with a hint, which I think may be of some benefit to our English farmers: without farther apology then I shall proceed.

It has been observed, that horses and black cattle thrive better, and get flesh and fat sooner, in salt marshes, than in fresh-water meadows or upland pastures; yet I do not remember ever to have heard any good reason assigned for it.

Some will tell you that the air of the sea whets their appetites; that the pasture is rich and nourishing; and that the herbs produced by the lands near the sea are more conducive to the health of herbaceous animals, than such as grow on upland pastures, whether natural or artificial.

But may we not rather attribute the thriving of cattle on these marshes, to the saline particles † with which the earth

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* This letter was read before the committee of agriculture, on Monday, September 12, 1763.

† Perhaps the thriving condition of cattle on salt-marshes may be owing to the salts making them drowsy; for it is an observation of graziers, that when cattle drink plentifully they thrive apace. T.

as well as its produce, is, when near the sea, strongly impregnated? Perhaps even the dews have their portion of salt *; but of this I have made no experiment, therefore mention it only as a probable conjecture; for as they fall soon after they are exhaled from the sea, without passing through the secretions necessary to separate their saline parts, why should not this be the case?

But to return to my first subject: I am fully of opinion, that the saline particles only, with which the grass is impregnated in the above-mentioned marshes, cause cattle to thrive in them in the manner they are known to do. These salts purge away the foul humours which the beasts have contracted, either by idleness, or by being over-heated in labour; by which means they are better disposed to be nourished by the aliment they receive.

It may, perhaps, be objected, that if the grass of these marshes is apt to purge cattle, this very purging, by being long continued, will be a means of preventing their growing fat. To this I answer, that the cattle take with their food every day nearly the same quantity of these purgative particles; but that the quantity of salt, which at their being first put into the marsh will have that effect, will cease producing it when they are, by custom, habituated to take a daily portion of it: this must be allowed, as we all know, that a few grains of rhubarb will operate as a cathartic to a person that is not accustomed to take it; yet it is as well known, that a man may take many grains daily, if he uses himself to it, without its being sensibly purgative to him.

It is not convenient to every one to send their cattle to a salt marsh: would it not, therefore, be happy, if we could substitute a method that would nearly answer the same purpose? I do not think this impossible: perhaps, if
com-

* We should rather imagine this gentleman to be mistaken in his conjecture about the saltiness of the dew, because, in the middle of the great South sea, the rain and misty vapours which fall are quite fresh, and a great relief to seamen when they happen to be in want of fresh water. Probably the moisture which is exhaled from the sea is, at the same time, deprived of its saline particles, at least the greatest part of them; by which operation it is rendered a proper aliment, or at least a vehicle of aliment, for men, cattle, and plants. T.

common sea-salt * was to be laid in the fields for the horses to lick as often as they pleased, they would thrive much better: were I to say I know it would have that effect, it would be no presumption.

Cattle are naturally fond of salt, and if left at their liberty, will take no more of it than what does them good. With this help, our fresh-water meadows, and upland natural and artificial pastures, would yield us a greater profit, and of course be worth more both to the land-owner and farmer.

Some will not allow a thing to have merit, unless it is supported by what they call a proper authority; and they do not allow the experiments of a particular person to be sufficient. To satisfy such I can assure you, that in the inland parts of Switzerland †, when their horses and cattle have endured the hardships of a long and severe winter, they turn them in the spring loose into the mountains, laying salt here and there upon the rocks, for them to resort to when they please; and of this they are so fond, that when the farmers want to catch their horses, they take some salt in their hats, as we do oats in a sieve, to allure them.

Experience has long convinced them, that the salt thus laid in their way answers every good purpose: their cattle are more healthy in general than ours are in England; and almost to this alone do they attribute it.

In the provinces of Munster and Connaught, in Ireland, they very frequently lay salt ‡ on slates, for the benefit of their horses when at grass; this, they find, does the cattle great service; and in this should we imitate them, and not be too proud to learn of them, because in Ireland agriculture is not in so flourishing a state as in England.

O 2

Some

* This method of laying salt in the way of cattle may be, perhaps, to advantage practised; it carries with it an appearance of reason: we would therefore recommend it to the lovers of nature and agriculture, to make repeated and diligent experiments, and let us know the result of their observations. T.

† Should any gentleman in Switzerland incline to send us their observations on this or any other subject, it would be esteemed a favour. T. O.

‡ It would be conferring an obligation on us, if any gentleman in Ireland would describe to us this method of giving salt to cattle, as practised there; together with a particular account of its effects on their health, whether good or bad. T. O.

Some few farmers have (to do them justice) practised this method in our own country; but contenting themselves with the profit resulting from it, they have not propagated the knowledge of the many advantages they are sensible may be derived from this practice of giving salt to cattle.

The farriers and horse-jockeys know well the use of salt; they mix it often in their medicines, and find, by experience, that nothing proves so powerful a stomachic to horses, as a little salt thrown into their oats.

If the hints I have given are of service, it will give me great pleasure: but I must farther observe, that the use of salt is very proper when cattle are turned into clover *, lucerne, or cole-seed to feed: it is well known, that, on these occasions, they are very apt, unless great care is taken, to be surfeited; the salt would prevent this accident, and thereby greatly accelerate the fattening of the cattle, and make it much safer to the farmer. I have at present only to assure you, that I am,

SIR,

Very much your humble servant,

AGRICULTURÆ AMATOR.

NUMBER XX.

Transmitted to Dr. TEMPLEMAN.

*A Letter † from Farmer M——, of B——d, to the Honourable ***** Esq; Member of the Society of Arts, &c. on planting Potatoes, and on the Nature of the under Stratum of the Earth.*

SIR,

WHEN I had last the honour of seeing you at my house, you were pleased to say that the potatoes we had with our mutton at dinner were the best and largest ‡

* If salt will prevent the bad effects of clover, &c. it will be a great acquisition in husbandry. T.

† This letter was read before the committee of agriculture, on Monday, September 12, 1763.

‡ A potato was dug up last month, September, 1763, in the county of Cork in Ireland, which weighed, if we remember right, three pounds nine ounces.

you ever eat ; and upon my telling you there was something peculiar in their growth, you requested me to describe to you in a letter, the manner in which they were managed, and what soil they grew in. This is what I am now about to do : and you will, perhaps, be surprised to hear, that such fine roots grew in what is called *barren earth*. The fact, however, is as follows.

You know the twelve-acre *Old Crote* at the back of my house, and cannot fail remembering the row of elms that grew on the north side.

Some timber being wanting to repair the out-houſen, you ordered theſe trees to be cut down and ſawn into boards : when they were felled, I got the ſtumps up for fire-wood, and made my people carry all the upper bed of earth, where they ſtood, on to the land, in order to hearten it *. When this was done, there remained behind a ſort of a browniſh-red loamy clay, very hard, yet ſomewhat crumbly.

In this manner it lay bare till February was twelvemonth, for no weeds grew on it.

In February, the man who takes care of my garden asked me, in what part of it I ſhould have my potatoes : I told him in no part of it, but that they ſhould be planted on the north-side of the *Old Crote*, next the cherry-orchard : John ſeemed ſurprized, and ſaid, that no potatoes would grow there ; for, added he, *You know, maſter, the elms are but lately fallen ; and if there was any good earth, you carried it on to the land, leaving only the dead barren clay, on which even the weeds won't grow : but, however, maſter may do as he liſts, I ſe have nothing to do but obey ; he knows beſt to be ſure ; but it's well it an't a poor man's opinion, I know what would be ſaid then : beſides, maſter, the cherry-trees will keep off the little ſun that would fall on that ſpot, and the haulm will all rot.*

I was not, Sir, much in the humour to argue with John, being determined to make the experiment, and bad him follow me.

When

* This practice of carrying the upper bed of earth from the head and ſide lands on to the field, is very common among the Eſſex farmers : they ſay it heartens the land, and that, beſides, were it not done now and then, the head-lands would be raiſed too high by the earth which the plow carries on to them. O.

When we came into the field, I found, as he said, that the ground was quite bare of weeds, and indeed of every thing else: but this did not discourage me, as I concluded it must be owing to its hardness*.

I set two men immediately to dig it with strong spades and mattocks full two spits deep, ordering them to take up the roots of the elms whenever they met with them, and to break the clods as fine as possible. This was accordingly done; and I let the land lie in this manner till the latter end of March, when I planted it with potatoes in the following method.

I got some of the foundest roots I had in the house, and had them picked over and wiped, to separate the rotten ones. I then cut about half of them into quarters, leaving two or three eyes on each quarter, and laid them for two days in a dry shady place, where there was a thorough air†: this I did to prevent their rotting in the ground, as the soil, I found, was rather dampish.

The next thing I had to do, was to put them into the ground: for this purpose, I had a small trench opened across the land, about six or seven inches deep, with a spade: in this trench I laid the quarters of the roots two together, about eight inches distance: the earth of the second trench

served

* It is our opinion, that every kind of earth is, in some degree or other, capable of giving nourishment to plants, whether it be upon or under the surface; yet is it necessary, that it should be for some time exposed to the influences of the air, sun, frost, &c. before it will be in a condition of dispensing its nutritive qualities. An earth seemingly barren, dug out of a deep pit, will, if spread on the surface, and properly stirred and exposed, be soon in a condition of bearing plants, much more so than the earth, which, having been long at the surface, is nearly exhausted, by the number of successive vegetables it has given nourishment to. The notion of any earth being barren, merely because at a distance from the surface, is, by most intelligent naturalists, exploded: it may, perhaps, want a proper disposition of its particles, but the vegetative quality is ever inherent to it. O.

† This method of laying the roots after they were cut in the shade to dry, is worthy of imitation; the parts which were wounded form, by that means, for themselves, a sort of a cuticle: this prevents their being so soon injured by moisture; and there is a greater certainty of every quarter growing; by which means there may be a great saving of roots in planting an acre of land. R.

served to cover the roots in the first; and thus I continued going on till half the land was planted.

The remaining part I planted with whole roots, to try the difference; but I put them eight inches deep, and a foot asunder, laying them single, and the rows a foot from one another *. They succeeded to admiration; but I thought, that in the summer the stalks looked too vigorous, being very strong, tall, and of a deep green colour.

I took it into my head, that the roots would grow larger if the haulm was checked: thus persuaded, I walked over the land myself, treading down the stalks one by one. This checked the course of the sap, though it did not kill the plants †; and they throve very well afterwards till autumn, when the stalks withering, I caused them to be dug up, to be laid in dry sand for the winter: this is my way of keeping potatoes, carrots, and parsnips ‡.

I own,

* The distance Mr. M—allowed betwixt his plants, was by far too small; but the reason he assigns for it, was his land being dug so deep: yet we are apt to think, that had he allowed the plants a greater space to spread in, his crop would have been as large, and he would have saved many roots in his planting. It is to his land being so well and so deeply dug, that we attribute his having met with such success; for had not there been a great abundance of nourishment, by the particles of earth being so much divided, the plants would, in all probability, have starved each other, and the roots in general have been very small. The distance we would recommend, is at least a foot for the divided roots, and a foot and a half for the whole roots, regard being had to the richness or poverty of the soil. In Ireland they often plant them so near as four inches; but this is a very bad and unprofitable practice: roots are even in that country worth saving; for in the planting-season they will sometimes sell at the rate of two shillings a bushel; and in this way they allow eight bushels, or what they call a big barrel, to an acre. E.

† Some people practise this method with onions, in order to make their bulbs, or roots, grow the larger: it is not improbable, but it might have been of service to the potatoes, causing their roots to encrease in size, by diverting the course of the sap, which, without this precaution, in such a luxuriant soil, might have all been expended in the nourishment of a large and rambling, though almost useless stalk, useless except as far as it contributes to the encrease of the size of the root. H.

‡ Nothing is better than dry sand to preserve these roots during the winter; but they should be laid in it in regular beds,

I own, Sir, I was a good deal surpris'd to see what a quantity of fine roots were thrown up; I had more in weight, for the proportion of land, than ever I had before, and they were much larger.

The quantity of roots was much the same in the two parts; that is, the part which was planted with quarters, and that which was planted with whole roots *, only the potatoes which grew from the last were largest.

From this I concluded, that by planting in quarters, you may do with fewer roots; but that if we have a mind to eat very large roots, they are better planted whole.

By this trial, Sir, it is evident, that what is commonly called dead and barren earth, as lying at some distance from the surface, is capable of bearing good and profitable crops, and that all it requires is to be thoroughly well broke †.

It is very common for a field to have only a thin surface of light earth, lying on a hard bed of brownish clay: in this case they never plow into the clay, saying, it would throw up the dead earth, starve their crop, and fill the field full of wild oats; but this is all owing to their bad management; as I perhaps may, if your honour is not tired with this letter, tell you in another.

I intend for the future always to plant my potatoes in my field sides: I have this year some planted on a head-land, which promise to yield a good crop. I should have observed, that I do not in general approve of planting potatoes so close as I have mentioned above; but this land was fresh, and dug very deep, so that, though they might perhaps want a little room to spread in width, they had depth enough, and indeed they made use of it; for as low as the earth was loose we found good potatoes.

They

so as not to touch each other, and the whole covered with dry straw: they should be taken out only as they are wanted, for the consumption of the family, or the use of the cattle. H.

* Mr. M—— does not say whether he means by weight, or by measure, that the quantity of roots in each part was the same: we suppose he means by weight. We should have been glad to have known what quantity of land he planted, and what was the weight of his whole crop. E. H.

† To make it fertile, it must be also for some time, a year at least, exposed to the influence of the air, &c. E.

They grew so strong from the beginning, that there was no occasion to weed them at all; though I must remember to tell you, that weeds enough have grown on the land since: for my men had enough to do to clear it for a crop of latter peas, which I sowed there about a week ago.

I hope your honour will excuse the awkward manner in which I have told you my sentiments: I can relate facts, thank God, so as to be understood, but cannot boast of my style: were that my ambition, I must write more than I have leisure to do.

My humble respects to Madam, and am,

S I R,

B——d, May 19, 1763.

Your obedient servant,

A—— M——.

NUMBER XXI.

A Letter to the Editors, from a Member of the Society, recommending a cheap Method of making good wholesome Bread when Wheat-Meal is dear.

GENTLEMEN,

WE have had this year a very wet harvest; a great deal of wheat sprouted in the fields before it could be got under cover; and much of it was so far damaged as to be incapable of keeping long. The price of bread is already raised upon us, and if the winter should prove severe, it may possibly be still a great deal dearer.

This, Gentlemen, has induced me to send you an account of an experiment I made some years ago, which succeeded to my wish: it may be of great service to the poor in years of scarcity, and is very easily put in practice.

At the time I made this experiment bread was very dear, insomuch that the poor people in the country where I live could hardly afford themselves half a meal a day: this put me upon considering whether some cheaper method might not be found, than making it of wheat-meal.

Turneps were at that time very plentiful. I had a number of them pulled, washed clean, pared, and boiled: when they

were become soft enough to mash, I had the greatest part of the water pressed out of them, and afterwards had them mixed with an equal quantity, in weight, of coarse wheat-meal: the dough was then made in the usual manner, with yeast or barm, salt, water, &c. it rose very well in the trough, and after being well kneaded, was formed into loaves, and put into the oven to be baked.

I had, at the same time, some other bread made with common meal in the ordinary way. I baked my turnep-bread rather longer than the other.

When they were drawn from the oven, I caused a loaf of each sort to be cut, and found, on examination, the turnep-bread was sweeter than the other, to the full as light, and as white, but had a little taste, though no ways disagreeable, of the turnep. Twelve hours afterwards I tasted my turnep-bread again, when I found the taste of the turnep in it scarcely perceivable, and the smell quite gone off. On examining it when it had been baked twenty-four hours, had I not known there were turneps in its composition, I should not have imagined it: it had, it is true, a peculiar sweetish taste, but by no means disagreeable; on the contrary, I rather preferred it to the bread made of wheat-meal alone.

After it had been baked forty-eight hours, it underwent another examination, when it appeared to me to be rather superior to the other; it eat fresher and moister, and had not at all abated in its good qualities; to be short, it was still very good after a week, and, as far as I could see, kept as well as the bread made of common wheat-meal.

In my trials of this bread by the taste, I was not satisfied with eating it by itself; I had some of it spread with butter; I tasted it with cheese; I eat of it toasted and buttered, and finally in boiled milk, and in soup: in all these forms it was very palatable and good.

When I had thus far succeeded, I had some more of it made in the same manner, and after it was baked and cold, I sent for some of my poor neighbours, giving them of it to eat: they said there was something particular in the taste of it, but could not tell what to resemble it to: they allowed it

was not disagreeable; yet, when I told them in what manner it was made, they declined eating any more of it, alledging it was not what they were used to; and no persuasions were powerful enough to induce them, though wheat was then at a very high price, to make some of it for their family use.

Thus does prejudice often get the better of reason: they would not depend on the truth of what they saw, heard, and felt, but rather chose to eat wheaten bread, as their fathers had done, than make some of a mixture of wheat-meal and turneps, which would not cost them above half so much.

I am very much inclined to think, that very good bread might, in the same manner, be made, in times of scarcity, with carrots, parsneps, potatoes, Jerusalem-artichokes, and many other articles, which might be raised at a trifling expence: the carrot-puddings and the potato-puddings, which are both frequently seen at the tables of the great, have no particular taste of the respective roots they are made of; and this would, I dare say, be the case with the bread.

Yet, after all, let the bread made of these several articles be ever so good, of what avail is it if vulgar prejudices are so hard to be got over, that even hunger will not persuade the poor to eat of them? But this may not be the case every where; and if once, in a time of scarcity, the custom of making bread from some of these materials, was adopted in a particular place, it would soon spread, and become in a manner general.

It is for the interest of the community, that the food of the poor should be as various as possible: whilst their chief food is bread made of wheat-meal only, every time the crop of wheat fails, they are driven to the greatest distress; whereas, had they other ready and cheap resources, this would never be the case.

When wheat is dear, turneps or potatoes are frequently to be had at a reasonable rate; but if prejudice steps forward, and forbids the use of them, of what avail is it?

The poor in Ireland, God knows, have very little bread to eat, potatoes and milk being almost their only food: when the crops of potatoes fail, their misery is great indeed;

and all this is owing to their food being, as it were, confined to the single article of potatoes.

But little wheat, in comparison to the number of inhabitants, is bread there: the farms are all engrossed by overgrown undertakers*, who, some of them, hold upwards of 3000 acres of land, which they depopulate, leaving only perhaps six or eight shepherds cots: for this land they pay, it may be, about ten shillings an acre; but if a poor man wants an acre of it to plant in potatoes, they will not let it to him under five pounds †; and this he must give, or his family must starve the succeeding year.

Nothing can be of more prejudice to a country than these large grazing farms; the poor are thereby excluded from their share of the earth's produce, and are supplanted in their habitations by black cattle and sheep.

It is, however, to be hoped, that the ploughing husbandry will soon meet with greater encouragement in Ireland: did the land-owners know their real interests, this would soon be the case. I am,

GENTLEMEN,

Sept. 27, 1763.

Yours, &c.

S_____ L_____.

NUMBER XXII.

A Letter to the Editors, on the Manner of improving poor Lands in Thanet, at some Distance from the Sea, by sowing Saintfoin, &c.

GENTLEMEN,

MY last † was addressed to one only of your members, who is my particular friend: this waits on you, collectively in a body, with thanks, for your giving place so readily to my thoughts in your work.

I have been greatly amused, since I have been at Margate, in several tours I have made on the sea-coasts, and in the interior parts of this island.

Though

* See the note to p. 6. † See p. 7 and 8. ‡ See No. V. p. 22.

Though the lands in general here are very rich and fruitful, owing to the good tillage, and the quantity of manure they enjoy, yet at some distance from the sea they have land which is very barren and thin by nature; nevertheless, even this indifferent land they farm to the greatest advantage. In these soils the farmers sow saintfoin or French grass with great success, having sometimes two loads of hay on an acre.

This grass thrives best, I find, in these parts, on a thin coat of earth with a chalky bottom *; it pushes its long tap-root deep into the chalk, and extracts thence a nourishment, which is out of the reach of almost any other plant.

The land must always be exceedingly well prepared, before they attempt to put the seed in the ground: it has frequent plowings, and every the least appearance of a weed or root of grass is diligently picked off; grass in particular is a very great enemy to this plant; without the utmost care it soon chokes and destroys it. They sow this seed in April †, either at the beginning, middle, or latter end of the month, according to the season: dry weather is best, provided it does not long continue: however, a little rain in these light soils does no great hurt. The quantity of seed they allow to an acre is five bushels ‡; of course it is sown very thick. It does not lie any great length of time in the ground: when it is come up, they carefully hoe and weed it, to keep down the roguery and grass: this puts the plants forward, and makes them so vigorous and strong, that they will of themselves keep down the grass, especially in these chalky bottoms, where grass does not thrive well, and is not apt to coat land with turf.

Saintfoin used formerly to hold good in these parts for twenty years together, but it does not now of late years last so long: this is probably owing to their want of care in chusing their seed, which surprizes me, considering what good farmers they in general are. They get, it is true, when they can, the best seed § the island affords: but it would certainly be a much better way were they now and then to procure some

* See the note under page 37.

† See the first note, page 38.

‡ See the second note, page 38.

§ For the properties of good saintfoin seed, see page 38.

some of a finer growth from France; for it was from that country, as far as I can understand, it first came hither, about the latter end of Charles the Second's reign; and I do not hear from the inhabitants that they ever remember the importing any more since.

The climate of France is more natural to it; of course the seed comes to greater perfection there, whilst, on the contrary, in England, that, as well as many other crops, is apt to degenerate after a certain number of years.

Where this crop takes, it is very advantageous to the farmer; it yields him for many years plenty of excellent fodder, and that upon land which would otherwise, perhaps, scarcely yield him any profit at all; and besides all this, when the saintfoin begins to fail, if proper care is taken, the land when broke up will be found greatly refreshed, and in a better condition to bear tillage and a succession of other crops.

The farmers here, when they intend breaking up a saintfoin lay, feed it the last three or four years: mowing it at this time, they think, hurts and exhausts the land too much; and besides, the dung and urine of the cattle are of great service.

They observe here, as well as in other places where saintfoin is cultivated, that after land has been once sown with it, it will not for some years, to any advantage, bear saintfoin again *.

They sow also in these parts trefoil † and clover: the first in particular is of very great use, as affording plenty of feed for their sheep; and it besides prepares the land excellently well for sowing wheat.

The farmers hereabout commonly let their land lie three or four years in trefoil, in which time they either mow it or feed it with sheep, but more generally the latter: the last
season

* See No. VIII. page 36, *passim*.

† Trefoil is peculiarly well adapted to a chalky soil, on which the common red clover will not thrive near so well. In some parts of Essex they find the sowing it turn out well to them; but their general fault is sowing it either with barley or oats: it would do much better were it sown alone, and would besides yield them more advantage: but this is a doctrine few farmers understand. A.

season they feed the grafs off very clean, and lay a coat of dung upon the land.

They begin plowing about the first week in November, contriving so that the wheat season may be over by the end of the month.

In the spring, if the wheat is rank and the weather dry, they feed it down with their sheep, which they think makes the wheat branch more, and settles the earth about the roots of the plants *. Experience has convinced them, that this method of sowing wheat after trefoil, is better than sowing it on a fallow; for the land hereabout is naturally very light and hover, and the wheat on that account very much subject to be root-fallen †. To prevent this, it is no uncommon thing for them, as soon as they have sown their wheat, to drive a flock of sheep over the land, as I observed above, to settle the earth close to the feed.

Their crops of wheat here are generally three, four, and five quarters on an acre; which last is, indeed, a very large crop, when it is considered, that the land is in general, by nature, poor and barren, and that it is almost entirely owing to the industry and good husbandry of the farmers that it is at all brought to bear wheat: in fact, they are an assiduous people, and spare neither cost nor labour to improve their land.

On the light land here they for the most part sow about fourteen pecks on an acre, but on the richer lands they allow four bushels ‡. The

* Were the isle of Thanet farmers to roll their wheat in the spring, it would much better answer the purpose of settling the earth about the roots of the plants, than turning their sheep on it, which is a practice in general not to be approved of; for it very seldom does any good, and often a great deal of hurt to the crop. O.

† Hover land swells, and quitting the root of the plant, it is apt to fall.

‡ It is surprising that the farmers in Thanet, who are in many other respects so intelligent, should not amend their practice, and sow less seed; four pecks, and on the richest and deepest soil five pecks, are fully sufficient for an acre of land: it is not necessary, that the land should be in the spring covered with wheat-plants as a meadow is with grafs: it is much better that the plants should have room to spread their roots; they will branch more, have longer and heavier ears, and the same space of ground will at harvest yield more good sound corn. This matter has been often
verified

The farmers here never sow the seed produced by their own land; they find their wheat succeed much better by change; for which reason the seed which they sow on the light hover-land they chuse to procure from a gravel or deep cledge, or clay land, taking care that the soil on which the seed has grown should be as different as possible from that on which it is to be sown *.

Instead of making artificial fleeps with great parade, they make use of that which Providence has put in their way, wetting their seed with salt water which they fetch from the sea; and they afterwards sprinkle it with lime, to prevent the smut: they are also particularly careful to clear their seed from wild oats, cockle, &c.

I know no part of England where there are better farmers; for though they keep their lands constantly cropped without fallow, which they call sowing a *round tith*, yet do they so manage matters, as to keep them still in good heart.

They reap their wheat very high here †, leaving as much straw as possible in the field: this they say they do to save barn-room. Some farmers here have a practice of sowing rye ‡ to make bands for their sheaves, the straw being longer, and as they think tougher, than that of wheat. The reaper makes the bands, which he cuts as low as he well can, and binds the sheaves.

The wheat stubble, which, as I said before, is left very long, is generally mown for the maltsters §, as they burn it in

verified by experiment, yet will not the common farmers be persuaded to alter their practice: but suppose that corn sown thin would produce a crop only equal to that which was sown thick, yet still would the first be the most advantageous practice. If a farmer has, one year with another, thirty acres of wheat sown annually, and instead of four bushels he allows only four pecks of seed for an acre, he will certainly find his account in it; for if seed-wheat is only five shillings a bushel, there will be an annual saving of twenty-two pounds ten shillings; and this is surely an object well worth his attention. O.

* Some of our farmers have been curious enough, in this particular, to import their seed-wheat from Sicily; but it being found that the wheat produced by this was too hard to be easily ground by our mills, this fashion was soon dropped. R.

† See note to page 18.

‡ This is frequently done in France.

§ See page 19, and the last note at the bottom.

in their kilns to dry their pale malts for the London market. The greatest part of this island is a light chalky soil, so that wet summers in general agree best with it; and it is by this means the farmers here get so much money: for when the crops fail in other parts of the kingdom, they are almost sure here to be very large; and they have the great convenience, besides, of water carriage to the London markets. It is extremely pleasant, towards the latter end of the summer, before harvest, to ride over this little island: I don't imagine there is a more improved spot in the kingdom; the fields are all kept so clear from weeds, that they resemble a well-kept garden; they grudge no expence in hoeing, weeding, plowing, or manuring; and experience has long ago convinced them, that they pursue a right method. I shall, in a future letter, describe to you some other particulars relative to their methods of husbandry here: their practices are many of them good and worthy imitation; it would therefore be great pity if they were not made known, by some means or other, to the rest of the kingdom; and I know of no channel more proper than the *Museum Rusticum*: it is therefore I give myself the pleasure of writing to you.

Your humble servant,

Margate, Oct. 10, 1763.

RUSTICUS.

NUMBER XXIII.

A Letter to the Editors, from a Berkshire Farmer, recommending a very easy Method of encreasing the Milk of Cows.

THOUGH I am, Gentlemen, but a very plain man, and had no great learning bestowed on me, yet have I the public good at heart as well as my betters, and I know enough to perceive that your scheme is well calculated for promoting agriculture, and what depends on it; and, if properly supported, it will, I dare say, be of great use.

The support you want consists of letters from the several parts of the kingdom, as that alone can enable you to pursue your laudable plan.

On this principle I now write to you, knowing that it is much preferable for you to receive twenty letters improper for your work, than fail of receiving one which would answer your purpose. If you give my thoughts a place in one of your Numbers, I shall esteem it a favour; if you decline it, I shall not tax you with partiality, because you know me not.

The pieces contained in your Number already published are valuable, and you are certainly much obliged to the gentlemen who ventured to freight your bark with their thoughts in her first voyage.

I was born, and have lived many years, in the neighbourhood where I now occupy, as well as own, land; most of which time I have employed in endeavouring to make myself master of the several branches of husbandry.

I may venture to say I have in some measure succeeded, as I have acquired by my industry a sufficiency to support, and provide for a numerous family.

We run greatly upon malting in this country, so that there is scarcely a farm but what has a few floors that either are, or might be, applied to that purpose. I have myself made a great deal in my time; but it was many years before I knew in what manner to make a profitable use of my malt-dust; that is, the dust, tails, &c. which fall off in the screening.

I used very frequently to mix it with the kiln-dust *, and lay it on my land: but I found it a very hot manure, though in some cases of very great service: of this, experience, the best of mistresses, has often convinced me.

It was, I say, many years before I thought of giving my malt-dust to my cows †; but when I did, I found it answer
to

* Malt kiln-dust is in certain cases very good manure, particularly for cold lands. H.

† Malt-dust is very good food, when mixed with an equal quantity of oats, for horses; they thrive well on it; but of itself it is rather too hot for them. In Essex, several farmers give malt-dust to their cows, and find it answer well; and if we are well informed, the advantages derived from this practice are not exaggerated by our correspondent. But care must be taken to distinguish the genuine malt-dust from that which is called kiln-dust, which falls through the gratings from the malt whilst it is drying. N.

to admiration; it made them give much more milk, the milk was of a better quality, had no bad taste, and made excellent butter *.

My way is to give each cow half a peck in the morning when she gives her first meal, and as much when she is milked in the afternoon: for this purpose I every year, at a cheap rate, purchase a considerable quantity; for my own malt-house does not yield enough to supply my number of cows, and very few of my neighbours, as far as I can understand, apply it to this use.

My cows look sleeker, are in a better order, than ever they were before they were thus managed; and when they fall off their milk, they fatten kindlier than cows in general do.

The success I met with, when I first tried this method, induced me to continue the practice; and it is this success which now urges me to communicate my knowledge for the benefit of society.

Mistake me not, Gentlemen, I do not pretend to have discovered this matter; indeed I did not; on the contrary, it was communicated to me by a relation who lives in Hertfordshire, who had practised it with success for some years.

All the merit I have, is in not concealing it when it was imparted to me: I have told it to many, and many have reaped advantage from practising it; yet all the information I have been able to give has not brought the practice into sufficient estimation.

If it stands recommended in your work, it will doubtless soon be as generally practised as known †: whoever tries it will find encouragement enough to continue the use, as there is scarcely any thing I know which will better answer the purpose of making cows give a large quantity of good milk: one reason to be assigned for it is, that it makes them drink a great deal; and it is, besides, very nourishing food.

Q 2

That

* We have, since the publication of the first edition of this Number, had reason to be convinced of this truth. T.

† We cannot enough commend our correspondent's public spirit, and could wish every one would do the like; there would then be no reason to complain, as he does, of the almost invincible obstinacy of many English farmers. O.

That husbandry has improved only by slow degrees, may in a great measure be attributed to the farmers in general being so very tenacious of what little knowledge they have: their souls are too narrow to permit them to impart to others that knowledge which proves of any advantage to themselves: self-interest is the continual obstacle; and though, God knows, their communications would, for the most part, be little important, what they do know they will not impart *.

More than this, such is the opinion they have of their own methods of practice, that all the persuasions in the world will scarcely induce them to make the least alteration in them. *They attempt not, say they, to be wiser than their forefathers: had not the ordinary methods been found to answer every purpose required of them, they would doubtless long since have undergone a change, and this business would not have been left to us.*

This is the method of reasoning among the general run of farmers; but from this beaten path I have boldly varied, and to this do I attribute the success I have had in life; for, to own the plain and honest truth, I scarcely ever varied my methods of farming from those commonly in use without singularly profiting by it †; in so little perfection is husbandry, on which the happiness and well-being of the nation so much depends. I am, with great respect,

Oct. 12, 1763.

GENTLEMEN,

Near Abingdon, Berks.

Your most obedient servant,

A FARMER.

* We are sorry to say there is too much room for our correspondent's complaints, our farmers are indeed in general too much attached to old, and for the most part destructive and unprofitable, customs. E.

† We should be much obliged to this gentleman for his future favours: we cannot but think they will be worthy the attention of the public, not only as he appears to have had many years experience in husbandry, but also as he seems to be blessed with the talent of reflection on causes and consequences: without this talent it is in vain for a man to attempt being skilled in the several branches of agriculture. R.

N U M-

NUMBER XXIV.

A Letter to the Editors, on an improved Method of breeding Seed-Wheat.

GENTLEMEN,

ALMOST every landholder has some methods of farming his land peculiar to himself: this, Gentlemen, is my case; and as I know of nobody that follows my practice, but myself, my intention is, with your assistance, to lay it before the public; that, if it is approved of, it may come into more general practice; but if, on the contrary, no advantage is thought to result from it, I should be glad to see some reasonings on the subject by some of your ingenious correspondents.

My reasonings are but short on any subject: if any thing seems in my mind probable to succeed, I try it, and govern my future operations by the success of that, and a few more experiments in the same affair.

I join with many others in opinion, that it is best every year to change one's seed-wheat *, and this has been my constant practice: I have had many a weary ride to get seed that would please me, for I am, and always have been, very difficult in this matter.

I have near two hundred acres of land in constant tillage: these I divide into three portions, so that I have every
year

* It is certainly adviseable frequently to change the seed: to do it every year, is being perhaps over scrupulous, though it is erring on the right side. To assert that this change of seed is proper, is very easy, because it is warranted by constant experience; but it is not so easy to assign a reason why it should be necessary: to say the land is tired of bearing repeatedly the same crop, is in fact saying just nothing, unless we suppose that different crops require different juices to nourish them; but whether they do, or do not, is a point not yet settled among the naturalists. We should, however, incline to think that all plants require and subsist by the same nutritive juice, and that the difference in the properties of plants is caused by the very great difference there is in their organization; but we are far from imposing our opinion on others, neither would it be proper here to enter more largely into a disquisition on the subject. T.

year about sixty acres in wheat, sixty more in barley and oats: and the remainder are either fallow, or in beans, peat, or turnips, &c.

When I first came into my farm, I expended annually, of seed-wheat, thirty quarters; for, after the example of my neighbours, I allowed four * bushels of seed for every acre I sowed.

These thirty quarters often cost me above seventy pounds; and God knows I could sometimes but little spare so much money, after the great annual expence of getting in my harvest.

Some part of my land differs greatly in its nature from the other: near half my farm is a stiff deep clay; what bottom it has I know not, as I never could find it in digging my ditches, &c. the other half is a bed of light sandy loam; with a gravelly hard bottom †.

This difference in the soil of my farm is, on many accounts, a great advantage: particularly, my wheat does not all ripen at the same time; I have generally nearly got in that growing on my gravelly land, before that on my clay is fit to cut; and I can besides plow in all weathers, frost excepted.

But, Gentlemen, not to digress too much, I took it into my head that, with proper care, I could breed for myself, on my own land, as good seed-wheat as any I could buy, if not better; and I determined within myself to make the experiment.

Before I made this experiment, I had reduced the quantity of seed I used on each acre, to three bushels, which was a great saving to me. I had still occasion for above twenty quarters.

My first step was to select ten acres of the best land I had; five from the heavy, and as many from the light part of my farm: this land was by nature rich and good; it lay
on

* This is a bushel more than is sown by most farmers, even in the common way of husbandry. O.

† Every farmer should, by digging or boring, inform himself what are the different beds of earth under that which he constantly
ti. A.

on the gentle southern declivity of a hill, and required very little manure: it lay in two little detached fields, at some distance one from the other.

When I had prepared this land by a winter and summer fallowing, in which time the clayey part was plowed seven * times, and the light land five times, I had both fields sown with some of the best wheat I could procure; that for the heavy land I got from Hertfordshire, the other from a particular friend who holds a farm in Cambridgeshire.

When the season for sowing approached, I was mightily pleased with the appearance of my two little plots; for they resembled the best-kept gardens, not a weed to be seen, and the earth as fine as garden-mould.

On this occasion I did not brine my seed, but had it put into a large tub: some water was then poured on it, and I made a stout labourer, with a stiff half-worn birchen-broom, stir it very briskly about for near half an hour; this I imagined would wash off the smut, if any there happened to be: the light seeds, which were very few, were skimmed off.

I let the wheat afterwards lie three hours soaking, when my man again stirred it briskly with the same broom, and immediately poured the water off.

Whilst yet wet, the seed was sprinkled in the usual manner with flaked lime, in order to prepare it for sowing.

My reason for not brining it † was, that I thought it would bring it too forward; and I rather chose to sow it early,

* It cannot be too often inculcated, that it is scarcely possible to plow lands too much; the only danger is in the expence that is incurred: yet it must be considered, that though land cannot have too much tillage, this tillage may be given at improper seasons, so as to do more hurt than good; as, for example, clayey lands should never, if there is any possibility of avoiding it, be plowed in wet weather, particularly after Christmas; for if it should rise in clods in autumn, the winter frosts will mellow and reduce it; but if it is plowed wet in the spring, it will be rough the whole summer. It should be remembered, that the intention of tillage is to reduce the earth into very small particles; every thing therefore that conduces to this desirable end, must of course be highly useful. N.

† It is not always necessary to brine wheat before sowing: washing it well answers the purpose of preserving it from smut, by

early, which is, I know, in general, a very good practice.

In sowing this land, I, in some measure, followed Mr. Tull's directions; that is, I sowed my wheat in rows with large intervals in the following manner.

I had a furrow opened about a rod from the hedge: in this furrow some seed was by a careful hand very thinly scattered, not sowed in the common way with a fling of the arm.

It took up time; so I had two sowers to each plow. When the plowman had drawn the first furrow, he then opened another, at about ten feet distance from the first in the land; and seed was in the same manner thinly scattered in this also: after this, he returned to the first furrow, and drawing another close to it, covered the seed; the same thing he did by the second furrow: he afterwards went two bouts without any seed being sown in the furrows; but the third bout, seed was thinly scattered, as before, to form the second row of corn in each bed: another bout was made to cover the seed when the two beds were finished, the middle of the interval being left unplowed.

In this manner * both my little fields were sown, in double rows with intervals about five or six feet wide betwixt the beds, and the rows about two feet asunder.

The

by removing the infectious powder which is apt to lodge at the rough germ of the seed. Brining is most necessary at a late sowing, as it will then bring the corn forward; but it is always best omitted, unless the land is in fine tilth: if it has not been well plowed, the wheat, which had made a quick progress by the assistance of the saline particles it had imbibed in the brining, receives a fatal check, not finding the circumjacent earth in a condition to second the operations of the salt. When any good is expected from brining wheat, the seed should be left from twelve to twenty-four hours in the steep, according to its quality, as it is harder or softer. If this is not done, the brine will be of little more service than plain water. N.

* Our correspondent's method was but a faint imitation of that recommended by Mr. Tull; yet, all things considered, it was perhaps better calculated for success. The instruments made use of were such as the labourers well knew how to handle: they were not much put out of their way; consequently they were more ready

in

The corn came up very well, and preserved a good wholesome appearance all the winter.

Early in the spring, that is, in the month of February, I made a careful man sow the spaces betwixt the rows of corn on the heavy land with wood-ashes, and on the light land with foot *: these were both soon washed in by the rain, and the effects were speedily to be seen in the new-assumed vigour of the crops, and this vigour continued till the corn was ripe.

As soon as any weeds appeared, the intervals which were left unplowed at seed-time were turned up, and the spaces betwixt the rows diligently hand-hoed: this hand-hoeing was several times repeated, to keep the crop quite clear from weeds, the intervals had also several other stirrings; but this work was chiefly done with a very light plow, without an earth-board in the heavy land, and without either earth-board or coulter in the other little field.

Every thing came very well forward; and when the wheat began to spindle, I had the outsides of the rows well

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R

earthed-

in their obedience. Had the drill-plow been used, there would doubtless in the light land have been a greater regularity; but it is a question, whether in the heavy land it would have worked at all. The advantages to be derived from the full and entire practice of the new husbandry, are not yet known; neither perhaps would it be proper to fall into it too suddenly. We would recommend to our readers, at least such of them as practise husbandry, to allow their plants of corn much more space to grow in, and not be afraid of the additional expence of hoeing and weeding, which will be well paid for at harvest. If this method succeeds with them, of which there cannot be the least doubt, as it has been several times tried, they may then attempt sowing in rows with intervals, but still making use of the common implements. There may not probably be occasion for their making any further alteration in their practice: yet they may incline to try the drill; if this is the case, let it be on light land, and on a small plot; if it succeeds, they may enlarge their plan; if it fails, the loss will not be great, and the result of their experiments will be of use to others, if they have public spirit enough to communicate their observations. N.

* Both wood-ashes and foot sown in spring on corn land, are excellent manure: about twenty bushels of either is enough for an acre; even half that quantity will be of very material service. N.

earthed-up with a plow, and the insides with a hand-hoe: the insides were done first *.

At harvest the fields made a noble appearance: a fine well-broke earth striped with rows of healthy wheat.

The cutting this wheat was very easily performed, it stood so ready to the reapers hands; and when it was housed and threshed, it yielded me about four quarters on an acre, one with another, the first year, though I have since had sometimes more, sometimes a little less.

My ten acres then yielded me about forty quarters; and I had occasion for only about twenty-two to sow my common wheat-lands: I therefore took only the first and prime part of this crop, getting the sheaves very lightly threshed; what remained made excellent bread-corn.

I never saw finer seed-wheat than mine was this year: my heavy lands I sowed with the seed produced by the light field, and my light lands with that produced by the heavy field.

As soon as I had got in this select crop, I got the intervals in order for sowing with a second crop, in most respects continuing the practice of the year before: I had the like success, and might, perhaps, with equal advantage, have continued cropping the fields every year in the same manner: but, not to depend too much on Mr. Tull, my next crop was a full crop of barley on them, which succeeded well: and I selected two other plots of ground, of equal goodness, for my seed-corn husbandry, as I call it †.

In this manner I have now for several years past managed, growing my own seed; and, if any thing, my crops have
since

* The practice of earthing-up plants, just before they seed, is much to be commended: it furnishes the roots with a fresh supply of food, and gives an astonishing vigour to the plants. In wheat it fills the ear, and plumps the grain, in some measure supplying a deficiency of rain before harvest: it also often prevents the corn from being lodged. This is scarcely practicable but in the new way of husbandry. O.

† Our correspondent was quite right not to hazard sowing the third crop of wheat on the same land, particularly as he says he had other fields as proper for his purpose: we do not dispute, but that the same land may, in the new way of husbandry, if properly
advised

since increased : but I have again reduced the quantity from three to two bushels of seed, for each acre of my wheat-land in common : that is, such as I sow in the ordinary way : on some of my rich, strong land, I do not use above six pecks *, and find it answer very well.

I could like to extend this new husbandry, or this imitation at least of the new husbandry, over all my lands that are in tillage : but in my method of practising, the expence would be too great : my sowers are well paid ; I have enough to do to make my plowmen go out of their ordinary way ; and it costs me a great deal hoeing : yet all this I do not grudge to procure good feed.

By introducing the drill-plow and the horse-hoe I could save a great deal of labour on my light lands ; and I may probably some time or other attempt it : but, at the same time, I am very sensible, I shall find great difficulty in getting men that will even try to do the work with these instruments. The common labourers in husbandry hate novelty : they pursue, without murmuring, the old beaten track ; but put them out of it, and thought will become necessary : the fact is, they imagine it a very great hardship to be obliged to work and think too, and all for the same money.

Without great resolution, and some kind of authority, a farmer will be obliged to let them even dig a ditch their own way : innovation they like not in any shape, often making use of the expression, that they are too old to learn.

R 2

This,

assisted by manures, bear wheat for many successive years ; yet is there no necessity for making this a practice, especially as there is always such a great demand for barley and oats ; and any soil, that is proper for wheat, will produce barley and oats to advantage, and may afterwards without hazard be put in wheat again. The trying land in this manner is rather more a matter of curiosity than any thing else. Mr. Tull asserts, that in his method, without the assistance of any manure, land may be profitably sown with wheat every year ; but this is not our opinion, whatever may be done in this case with manure properly and seasonably applied. N.

* That quantity, and even less of good sound tried seed, is enough, with care, for an acre of any kind of land : more is rather pernicious than otherwise, besides the loss of seed ; no inconsiderable article in many farms, as our correspondent plainly by experience proves. R.

This, to a man who is very much disposed to lend a helping hand towards the improvement of agriculture, is a mortifying circumstance: there is scarcely any thing so difficult as to make an obstinate man useful: if, by dint by authority, you oblige him to go out of his way, he will rather contribute to the loss of your crop, than not to endeavour to convince you that he is in the right. I have often, to my sorrow, felt the truth of this observation *.

Several reasons, though I deal not much in them, may be assigned for the seed-wheat, I raise in the above described manner, being so good.

In the first place, I sow it on land that has not tasted any dung † for some years, but is, in its own nature, rich and good: to this practice I ascribe a great deal of its goodness. In the next place, as the corn does not stand too thick, it enjoys all the benefit it can receive from the sun and air: by this means it attains a perfect maturity, and is certainly improved both in bulk and quality.

The slight spring-dressing I give it, of soot or ashes, is of very great service: it warms the roots, and brings the corn forward; it loosens the earth, and either itself gives nourishment to the plants †, or, at least, puts the earth in a disposition to afford it.

Not

* Our correspondent's reasonings on this head are very just: he seems to speak feelingly; and we are sorry to say that many others lie under the difficulties he mentions. What chiefly prevents a reformation among our labourers in husbandry, is, the masters in general being but little more enlightened. R.

† Plants that grow on sweet undunged land are much to be preferred to such as are raised on the rich manured soils, such as we find near great towns. For this reason, pulse and garden-stuff, growing in a little hamlet, is always sweeter than where dung is plentiful. About Paris the gardeners are often obliged to lay down their grounds in grass to abate their rankness; for in a certain number of years the land, by being continually mended, grows so rich, that nothing of garden-stuff will thrive on it, but sickens with a surfeit of unprepared food, rots at the root, and dies. O.

‡ This dressing probably does both; for the salts contained in the soot and ashes, being dissolved by the moisture of the earth, not only become a proper food for the plants, but raise a fermentation, and dispose the earth in its turn to yield its salts or nutritive juices. H.

Not a little is to be attributed to the frequent hoeing betwixt the rows and the stirrings of the intervals; and I find one very particular and great advantage result from it, which is, that it is an excellent means of clearing my land of weeds; for they no sooner attain a part of their growth, but they are destroyed long before they seed.

Farmers in general think their fields cannot in the spring be too full of wheat-plants: the ground seems covered with verdure, and the blades are, as it were, crowded for want of room: when the weeds begin to get up, they send in a parcel of men and women with weeding-hooks, not letting a hoe come near the land to cut them up: they are sadly afraid they should not have plants enough at harvest; whereas, if they were to measure and mark off a rod square of land in February, and count the plants growing on it then, and afterwards count them in the beginning of August, it would almost always be found, that four parts in five of them had perished in the intermediate months, and that what remained were, by far too much crowded still, and had each but few stalks.

I never weed my corn of late years; for as I allow only two bushels of seed, and often less, to an acre, the plants come up thin; and there is of course room for a moderate-sized hoe, which is the instrument I clean my land with*: and so far from being fearful of having my crop injured by this means, I order the workmen, where the plants stand too close, to cut them up without mercy, as they would do the most pernicious weeds: if there happens by any accident to be a vacant spot, they easily remove some plants to it, with earth about their roots, by the help of their hoe.

By this management, I, in some measure, reap the benefit of the advantages promised by the new husbandry; though I have not such opportunities of so often giving the plants a fresh supply of nourishment, nor of earthing them up when
the

* We cannot enough recommend our correspondent's practice with regard to keeping his crops clean: the hoe is certainly the most proper instrument; and, as he observes, there is no danger if many of the wheat-plants are cut up in the work: the great fault of the present race of farmers, is scattering their seed too thick on half-tilled land. T.

the grain is forming in the ear ; for, after the corn has put forth its stalks to any considerable length, it would not be so proper to send in the hoers : but all the loss is the want of earthing up the plants so late as I could wish ; for the weeds will, before this time, be pretty well got under, and few of them will be able to ripen their seeds before harvest, when they will of course be destroyed by turning in the stubble, which I always do as soon as possible ; though many of my neighbours let their stubbles lie rough all the winter, for the sake of feeding a few score of ewes.

In the beginning of my letter I observed, that almost every farmer has methods peculiar to himself ; and they are, for the most part, such as were practised by their fathers, grandfathers, &c. whom they succeeded in the culture of their farms.

My methods, as you must now be sensible, differ from most of those used by other occupiers of land ; and if I cannot so well defend them by arguments, an experience of several years has convinced me that I ought still to persist in the practice of them : they have answered all the ends I could wish from them ; what could I desire more ?

I am enabled to raise all my own seed without the trouble of procuring it from a great distance, at a large expence, and with a deal of trouble.

My crops are to the full as good as ever they were, and I use less seed by above one half : my manure goes a great deal farther than it used to do, because I bestow more plowing and other tillage on my land ; and I am not so much pestered as I formerly was with weeds, for they now very seldom are suffered to seed on my land.

Of this last evil, I mean that of weeds, I have not, however, yet got quite rid ; for such of my fields as border on my neighbours lands are still often infested ; some of these same neighbours, I have several times mentioned, are but slovenly farmers, and the weeds which have winged or downy seeds, are constantly waisted by the wind from their land to mine * ; so that I, in some measure, am punished for their

* This evil and inconvenience, complained of by our correspondent, is of much greater consequence than is in general imagined ;

their neglects: thistles are this way particularly troublesome, as the seeds of them will sometimes be carried a very considerable way by the wind.

I have very little more to say at this time, except that I never thresh the sheaves that are to supply me with seed-corn till just when I want to make use of it. I have a notion, that the seed keeps better in the covering nature has given it, I mean the chaff, than it would do without it; and I am pretty certain it sprouts sooner in the ground, the husk or bran of the grain being preserved in a tenderer and more yielding state, than it would be were it exposed to the open air *.

I should be glad if any of your correspondents would inform me, at what distance wheat-plants should stand from each other in a good soil, so as that their roots should have space sufficient to extend, that their stalks should enjoy all possible benefit from the air and sun, and that yet the land should bear the largest crop it was capable of †.

I have not yet been able to come to any tolerable certainty in this important point in husbandry: I have thought much about it, but as yet to no great purpose. Was this point once fixed, we farmers should go upon a much greater certainty, both with respect to the quantity of the seed, and the reasonable expectation we might form of the crop.

I wish you, gentlemen, great success in your laudable undertaking: and, indeed, I doubt not but you will meet with it, and have plenty of correspondents and subscribers.

GENTLEMEN,

Oct. 4, 1763. Your most obedient humble servant,
An ESSEX FARMER.

imagined: we have often seen instances of great disappointments by this means, particularly when the lands, in the neighbourhood of a clean farm, are infested with thistles, the seeds of which, as he justly observes, are carried a considerable way by a brisk gale of wind. It is a great pity farmers in general are such slovens in the land; their hedge-rows often have the appearance of a nursery of weeds; and it is sometimes difficult to determine whether poppies or wheat-plants are the crop. O.

* This is, perhaps, being more nice than is necessary: if it is, however, an error, it is on the right side: and we could wish every farmer was as accurate in his practice and observations. E.

† We join with our correspondent, in requesting the sentiments of some of the ingenious practitioners in agriculture on this subject. A.

NUMBER XXV.

A Letter to the Editors, recommending a new Manufacture to be established in England.

GENTLEMEN,

WHATEVER additional employ we can find for the poorer sort of people, is, in fact, adding so much annually to the wealth of the kingdom; especially when the raw commodity to be manufactured is naturally produced, and in plenty, either in England, or in any of her American colonies.

This, gentlemen, is my motive for now writing to you. I would propose the establishment of a manufacture, which has been hitherto overlooked or unattended to, and which would yet be of great utility.

In our island of Jamaica there is great plenty of the plant which is called *apocynum*, or dog's-bane. To the pod which contains the seed of this plant is fastened a plume of cottony down: some of the pods are very large, and of course produce a greater quantity, which is easily collected.

This plant grows like a common weed, in the West-Indies, without cultivation or care: the down is soft, light, and warm, and might be applied to many uses*; but particularly we might make of it counterpanes for beds, which would infinitely excel the white cotton tufted counterpanes now so much in vogue.

This is no conjecture; for counterpanes are very frequently made of this down in the south of France, where they are very much esteemed.

This

* A premium is already published for encouraging the manufacturing of the several parts of the fruit-bearing plantane-tree. The contents of this letter may therefore probably be taken under the Society's consideration, when the subjects for the next year's premiums are determined. We return our correspondent many thanks for the trouble he has taken in giving us the hint. A,

This is certainly an object well worth our attention; for as our own West-India islands do not supply us with a sufficient quantity of cotton for the support of our manufactories, this down would, in some measure, supply the deficiency, and be, in many cases, an excellent substitute for it.

Several sorts of the *apocynum* thrive well and ripen their seeds in the south of France: they call this down there *delawad*; and many plantations are made and kept in good order for the sake of it.

It is chiefly, if not entirely, in waste and uncultivated lands, that this plant is found in Jamaica; for being a troublesome weed, which propagates itself very fast, they endeavour to banish it from their sugar-grounds: on this account it might be imported raw into England at a very cheap rate; and of course the manufacturing of it would better answer to the undertakers*.

Many kinds of the *apocynum* are carefully preserved in the *British Museum*, where the pods, with the cottony down, may, by the curious, be seen.

Nothing can be more proper than this down to make bed-coverlids for gouty people; it is so inconceivably light, and yet so warm: it would make excellent stuffing for pillows and cushions of chairs, and warm stockings and gloves; and even night-caps for sick people, or such as are of a tender and chilly constitution, might soon be made of it.

I shall not take up your time in enumerating all the advantages which may be derived from the manufacturing of this down: it is, as I said before, much used in some parts of France, and might doubtless be greatly improved in the hands of English artists.

Can the Society of arts do better than to propose a premium for the best counterpane, which shall be made of it within two years?

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S

Some

* In all manufactures the cheapness of the raw commodity is a matter of great moment; and this down of the *apocynum* seems to be a cheaper material than cotton; of course the articles that are made from it must be in proportion cheap. If the counterpanes, &c. made of this down, excel in quality those made of cotton, they will necessarily be had in higher estimation, and may in time become an important article in commerce. N.

Some encouragement is necessary; and many matters are daily encouraged at a large expence, which do not promise to be of half the use this might. I am,

GENTLEMEN,

Oct. 7, 1763.

Your humble servant,

A JAMAICA PLANTER.

NUMBER XXVI.

A Letter to the Editors, from a Member of the Society of Arts, on an improved Method of raising Cucumbers, either for Eating or for Seed.

GENTLEMEN,

EVERY plant, which is not a native of a country, is apt, without the greatest care imaginable, to degenerate, after having been for some years cultivated with tolerable success. For this reason it is most advantageous, frequently to procure fresh seed from the country of which the plant is a native.

Many instances might be given of the truth of this assertion; but, indeed, it is so well known, that it is almost unnecessary: I shall, however, mention flax. This plant has been long cultivated, as well in the British Islands as in the United Provinces and Flanders, for the purpose of making linen; yet, with all the care of the planters, if a fresh stock of seed is not almost annually procured from the north, as from Riga, &c. it is well known to degenerate greatly.

This I take to be the case with the cucumbers, which are at present raised in most of our gardens; for they are certainly no ways to be compared, either with those which were, at their being first brought over, cultivated here, or with those we now meet with in Spain, Portugal, Italy, or the south of France.

Such as we find, either in the markets, or at the tables of our gentry, are in general a raw, crude, watery fruit, composed of a collection of indigested sap, without
firmness

firmness in the flesh, unwholesome, and absolutely so much without flavour, as to have no good taste whatever.

Such fruit may pass well enough with people who think coolness the only quality to be sought for in a cucumber: but to such as have a more delicate taste, or who have eat cucumbers in any of the countries above mentioned, they are almost detestable.

This was for some years unfortunately my case; for I was a long time destitute of a fine fruit. I could not, indeed, think of eating the miserable stuff which was often laid before me.

As I am naturally fond of cucumbers in hot weather, it is no wonder I should form many schemes of raising them good in England: but all my experiments failed, till in the year 1750 I accomplished my wished-for purpose. I then began to eat cucumbers with satisfaction again, as the fruit I raised was large, firm, thick in the flesh, and of a delicate and genuine flavour: in fact, they were nearly as good as any I had met with in Italy.

The method by which I gained this grand point, I shall now describe, as, perhaps, others besides myself may be glad to practise it, especially as it is attended with no great expence.

I am not fond of cucumbers till the warm summer's weather comes on; and on that account also my method is well adapted to my taste, though they might be procured much sooner by means of forcing-frames: but this would be attended with considerable expence, unless it was done in gardens where they were already provided with frames for forcing cherries, &c. in these the cucumbers would thrive very well in the spaces betwixt the trees, and that without injuring the fruit.

But to proceed: when I first formed an idea of this method, I procured some of the best seed of the common prickly cucumber I could get: from this, in the spring of the year 1750, I raised some plants on a moderate hot-bed, not hurrying them too much in their growth.

In May, when the danger of frost was almost over, I familiarised the plants by degrees to the air, and towards

the latter end of the month planted them in the open ground against a south wall.

In this situation they throve apace, and as fast as they put forth their runners, I nailed them gently up against the wall. They did not send forth many blossoms till they had run up a considerable height, at least five feet; after which the fruit began to shew itself.

I did not give the plants too much water, and this I have since found a necessary precaution *.

The fruit encreased in size daily, was of a fine green colour, and differed greatly from that of some other plants raised from the same seed, but planted in the ordinary way; the runners being suffered to trail on the ground.

When I gathered my first cucumber, I was exceedingly delighted at its appearance; for it was long, thin in proportion to its length, of a beautiful green, not too deep, with a whitish summit.

When I cut it, I found the flesh thick and firm, but few seeds, and those very small; and its flavour was inexpressibly delicious, especially to me, who had been so long without eating any of that favourite fruit.

It was the same thing with all I afterwards gathered from these vines.

I was not, however, so much taken up with the indulgence of my palate, for the present, as to neglect providing for a future supply of good fruit: accordingly, I pitched upon some of the finest cucumbers, not at too great a distance from the roots, and left them on the vines to perfect their seed.

In this manner have I raised cucumbers for my own eating ever since, and have the good fortune to find, that
instead

* Our correspondent's experiment was of an uncommon nature; yet we can readily give credit to what he asserts, as we know that the reflection of the sun-beams is of great advantage to this fruit, having experienced, that laying a cucumber or melon bed with tiles is of particular service, improving the fruit, and giving it a finer flavour. It is therefore reasonable to think, that training the vines against a wall would still be of greater service. N.

instead of degenerating, they have improved so much as not to be known for the common cucumber.

My neighbours, in the country, are glad when I have any seed to spare for them, and always find their cucumbers, that year, much the better for using it, though they do not grow so large as mine, neither have they so delicate a flavour, unless nailed up against a wall.

I am very sensible this method cannot, with any degree of convenience, be brought into general practice; yet, in every garden, a few plants may be so trained to prevent the seed from degenerating*; especially as, if the seed only is attended to, one or two plants, so raised, would supply a sufficient quantity for a large garden.

I must own, that in my method the plants do not bear so great a number of cucumbers as in the common way; but then they are, without comparison, larger, and of an exquisite flavour.

I have found the benefit of this practice; on which account I recommend it to the curious.

I am, GENTLEMEN,

London, Your humble servant, and
Oct. 6. 1763. A well-wisher to your work, }
A MEMBER of the SOCIETY.

NUMBER XXVII.

To the Editors of the MUSEUM RUSTICUM.

GENTLEMEN,

I Perceive you have given the *Leading Questions* I sent you some time ago, a place in your first publication. I am obliged to you for your complaisance, and am more-over

* This method, as our correspondent justly observes, cannot well be brought into general practice; but we join with him in recommending it for such vines as are to bear the cucumbers for seed: it seems a probable way of preventing it from degenerating, and would not be any great expence, as a small extent of wall would serve to supply with seed a large tract of ground. O.

over to thank you for your genteel compliment, contained in a note under page 55. It is this has induced me to send you some more *Questions*, which will, I hope, be as well adapted to your plan as the last set were.

I have only to tell you, that I like what I have seen of your work, and am

Oct. 14, 1763.

Your humble servant,

N. K.

LEADING QUESTIONS in NATURAL HISTORY and AGRICULTURE.

Of the Nature of the Soil, and the internal Produce of the Earth.

1. Of what nature, in the several parts of these islands, are the beds of earth immediately under the surface?
2. Of what nature are the beds of the rocks, in what direction do they lie, and what are their varieties?
3. In what places are the several kinds of marle found, at what depth, what are their qualities, and to what uses are they applied?
4. Where is there the greatest plenty of gravel, for mending the roads, and curing damp cold soils?
5. Do we not sometimes find under the surface a different kind of earth, proper to serve as a manure to the soil?
6. In what manner can the nature of land be judged of by the plants it produces, and by their vigour?
7. In what places is fullers-earth dug, and where is it most pure and free from extraneous mixture? might it not be found in places little thought to produce it?
8. Where is the best brick and tile earth to be found, and what is its nature?
9. What are the component parts of the several kinds of cultivated and uncultivated earths, of ochres and mineral earths?
10. Of what nature is the earth in the neighbourhood of mineral springs and mines?
11. What is the nature of the several mineral waters and salt-springs?

12. In what parts of these islands are coal-mines found, and what is the nature of the coal in the several districts?

13. What is the nature of our bogs, marshes, and bottoms? how were they formed? whence proceeds the water with which they are filled? is it stagnant, and on what account? do we find turf in these bogs, and at what depth?

14. In what districts are our mines, minerals, sulphurs, marcasites, &c. found? of what nature are they, and in what quantity?

15. Where are our iron mines situated, and what is the nature of the ore? Where are our lead and copper mines, and of what nature are they?

16. What are the properties of the several springs of water? To what causes can it be assigned, that certain springs ebb and flow periodically?

17. Might we not find marble in these islands, of a fine colour, and susceptible of a good polish? Could we find the gypsum for making fine plaster, lime-stone, free-stone, coarse marble, and sand-stones, what are their respective properties? Might not we find mill-stone quarries equal to those called French stones? Where are crystals, spars, &c. to be met with?

Of the external Produce of the Earth.

1. What are the indigenous plants of these islands?

2. What plants are most valuable for pastures? What noxious plants grow in our fields?

3. What plants are best adapted to form artificial pastures on the several kinds of soil?

4. What are the weeds which are most troublesome in our fields, and how may they best be destroyed?

5. Could not we grow larger quantities of woad, madder, and other plants fit for dyers use?

6. At what season do the several plants, natives or inhabitants of these islands, flower, and perfect their seed?

7. What sorts of shrubs are most plentiful; and what trees, or shrubs, will yield leaves that are most proper to serve as fodder for cattle, or to encrease our manures?

8. What

8. What are the several kinds of timber that are found in our woods and forests? Might not firs, pines, and larch-trees be to advantage planted?

9. What soil and situation is best adapted to each kind of timber-tree, and to what distempers is each kind subject?

Of Animals, Game, and Birds.

1. What mischievous animals have we in these islands, and what are the best methods of destroying them?

2. Is game any where in such plenty as to be any considerable detriment to the farmers; and how are the small birds that infest wheat-fields, &c. best driven away?

3. What birds of passage frequent this country? which of them breed here, and at what seasons do they come?

4. Would not the climate of some parts of these islands agree with some foreign animals, which are not mischievous, but which produce the fine furs? Might they not be a means of importing such from Canada, now it is in our possession? would they not do well in the north of Scotland?

5. Has the air of this country any effect on our breed of domestic animals?

6. What kinds of fish have we in our meres and rivers, and on the several coasts? Which of them are held in the greatest estimation? At what time do they respectively spawn? What fish have we which come in periodical shoals, and which are best for salting, drying, or otherwise preserving to keep?

Of the most noxious Insects.

1. What are the most noxious insects of this country, and which are those which have, as it were, stated returns?

2. When are they most numerous, and what circumstances are most favourable to their encrease, &c.?

3. What are the insects which breed on particular plants, and which feed on them?

4. What kinds are noxious to corn and grass, and what are they which chiefly attack the woods?

5. What are the best methods of either destroying them, of lessening the damage done by them, or preventing them from injuring our crops?

NUMBER XXVIII.

To the Editors of the MUSEUM RUSTICUM.

GENTLEMEN,

PERMIT me to contribute towards the embellishment of a work which, I firmly believe, will be of great use to the public. I do not, indeed, remember to have seen any thing better calculated to answer the ends proposed, than your *Museum Rusticum*: the plan is well laid, and comprehensive; and I doubt not but you will in a few months rank, in the number of your correspondents, some of the most eminent men we have.

If I mistake not, you will think the enclosed worthy of a place in your collection.

It was by mere accident I became acquainted with Mons. de Salens: he was made a prisoner in the summer of the year 1760; soon after which, I chanced to see him in distress, at a town at no great distance from my house: I found him to be a man of sense, and a gentleman. I supplied him with what little money he wanted, for bills on his agent; which have since been very punctually paid, and invited him to spend some time at my house.

I passed six very agreeable months in his company, and found him uncommonly intelligent in most things, particularly in what related to agriculture. This induced me, in the summer following, soon after he returned to France, to request him, by letter, to give me some account of what he knew relative to the culture of madder, in consequence of which I received the enclosed.

At that time I had some intentions of trying, myself, what success I should have in the culture of madder; but sickness, and some necessary avocations, have hitherto

prevented me. Wishing you great success in your undertaking,

I am, GENTLEMEN,

London, Oct. 3, 1763. Your humble servant,

G. T.

A Letter from Mons. de Salens, a French Gentleman, to G. T. Esq; relative to the Culture of Madder.

S I R,

I HAVE always a great pleasure in obliging you, and particularly so now, when you ask my sentiments relative to the culture of madder. I have raised it myself, though not in any very large quantities, in one year; yet enough to be some judge of the different methods of managing it.

Madder-roots are often sold in France without being reduced to powder, and the dyers are then very careful in the choice of it. They in general prefer new roots, as they are thought to yield most dye; and if they are black, rotten, specked, worm-eaten, or scatter dust when they are broken, they are to be rejected.

These faults the eye will discover; but they should also be examined by the smell; for, if they are the least inclined to be musty, their value will be greatly reduced.

Many practise great frauds, by moistening the roots just before they sell them: this is doubly injuring the buyer; for he not only pays for more than he receives, but the whole is subject to be spoiled, if it is kept long after it has been so moistened.

Madder, to be good, should have a fresh sweet smell; the bark should be smooth without cracks, and lie close to the wood; for if it is shrivelled and detached, it is a sign the madder was dried by too hot a fire*: but, after all, the very best method of knowing good madder, is to make a small trial of it on a piece of woollen. The following method is recommended by M. Hellot: I have experienced it to be good.

To

* In Zealand they say, that when the madder-root fresh taken out of the ground has a very bitter taste, it loses less in the drying, and spends best afterwards. O.

To dye one pound of woollen yarn, a bath must be made with five ounces of alum, and one ounce of red tartar, dissolved in a sufficient quantity of water. The yarn that is to be dyed must be well steeped in this bath. At the end of seven or eight days, half a pound of ground madder-root is thrown into water as hot as a man can bear his hand in without being scalded. When the madder is well mixed with the water, the yarn is put into the bath, which is kept to the proper heat for an hour, great care being taken not to suffer it to boil, which would take off the brightness of the colour; however, at the end of the hour, the bath is made to boil, but the yarn is immediately taken out.

Mons. du Hamel, who recommends this method of trying madder, observes, that as very trifling circumstances will have an effect on the operation, the best way will be to make two experiments; one with the madder that is to be tried, and the other with the best Dutch or Smyrna madder.

Nothing can be more easy than this experiment: I have made it, and, with care, it always answered, and discovered the quality of the root.

You seem to hint, that you intend to plant a piece of ground in madder: this it was, I suppose, induced you to consult me on the subject: you might have had, without doubt, much better advice than I can give you; but you could not, I am certain, have met with any one who would take more pleasure in obeying your commands.

I send you the recital of the above experiment, that you may, without consulting others, know when your crop is good, and nearly what will be its value when sent to market, which depends entirely on the goodness of the dye produced from it.

I shall now proceed to give you my observations, as they occur, on the culture of this useful plant; but it will be without method, and chiefly such as I think may be of use to you to put in practice in England.

I am apt to think there is hardly any kind of soil, but what madder will grow in; but it does not thrive alike in all: on the contrary, scarcely any plant sooner discovers

the richness, or poverty of land, by the state of its growth, than madder: in rich land, and a soil that agrees with it, it is luxuriant, and produces a great number of sizeable, well-conditioned roots; but in a poor, dry, hungry soil, the plant is visibly checked in its growth, and the roots of it are small, and few in number.

Madder is a great friend to moisture, and therefore thrives best on a good loam, with a clay bottom. It is very fond of fresh land just broke up*; but it must be so situated as not to be subject to be overflowed, as that will destroy the plant.

Madder requires, to come to a state of perfection, a great deal of nourishment; yet it is said not to impoverish the land; and this, in fact, is evident; for when the madder is dug up, the land will be in excellent condition to bear a good crop of wheat.

I have tried several ways, and at length am of opinion, that the best method of raising madder in France, is from the seed: it occasions, indeed, at first, some delay; but by continuing to sow a quantity in the nursery every spring, you will never fail of having plenty of plants.

The seed must be sown on a bed of earth, dug well, and made very fine by the rake, with which instrument the seed must be slightly covered.

When the plants appear, they must be carefully weeded, and set out with a hoe: the bed must, during the whole first and second summer, be kept very well hoed, and clear of weeds; and, if this is done, they may be planted out the second autumn.

I have many reasons for preferring this method in France; but I shall forbear giving a detail of them, because my opinion, with respect to planting madder in England, is different.

The seed of madder does not ripen so well with you, as with us; neither does it, as I have been informed, take so well on being sown. For these reasons, I would recommend it to you to make your plantation with shoots that

* Mr. Miller is of a different opinion; in his Treatise on the Culture of Madder he says, it thrives best on a soft sandy loam, and if it has been in tillage some years, it will be better than that which is fresh broken up. O.

are put forth by the old roots in spring. I have practised this method, and met with success.

For madder to succeed well, there should be a great depth of good soil *, and it should be turned up very deep with a plow, or, what is much to be preferred, with a spade. When the ground is properly prepared, it should be planted with sets, being the spring-shoots pulled up in a madder-plot, with some root to them; for, if they have not some root and fibres, they will not take kindly: these shoots generally come from the layers of the plants, and great care should be had in taking them up, or the crop of madder will be damaged: the best way of doing it is with a dibble †, that has a flat edge shod with iron; this, on being thrust into the ground, cuts off the root at a proper length, and by gently declining the handle of the dibble, raises the set without injuring the fibres of the root; and great care should be had not to take up too many of these shoots, or stalks, as they are undoubtedly necessary to the support and thriving of the principal roots, which, were they deprived entirely of their stalks, would certainly perish.

It is scarcely necessary to inform you that, as fast as these sets are taken up, they should be immediately replanted.

To make the method of planting these sets more intelligible to you, I must observe, that they are planted nearly as potatoes are planted in Ireland; that is, a straight furrow is drawn, the sets are put into it, the earth of the second furrow is thrown over them, the second furrow is filled with sets, &c. and so on till the whole ground is planted.

We place the sets here within three inches ‡ of each other; but this I think is too near for good land: perhaps they would thrive better, was double the space allowed: when

* Mr. Miller says, at least, two feet and a half, or three feet. N.

† Mr. Miller thinks the ground had better be opened with a spade, that the shoots may be separated from the mother-plants with as much root as possible. R.

‡ This is undoubtedly too near; a foot should certainly be allowed. O.

when three rows are planted a foot asunder, we leave an interval of four or five feet, according to the state of the land.

Grounds planted with madder, always succeed best when gentle rains fall soon after the work is done, as the sets take root the readier, and the whole gets into a thriving way.

In Holland and Flanders their method of planting differs from that above described: they take up their sets from an old madder-ground in May, and they plant them again immediately with a dibble, about three inches asunder, in rows about fifteen inches from each other; they form their beds about ten feet wide, and leave intervals of only one foot and a half, or thereabout.

The best time of planting a madder-ground is, undoubtedly, in autumn*, as the sets are then best furnished with roots, and the rains which commonly fall at that season forward their growth.

As the stalks of the madder-plants are to be laid down and covered with earth, the intervals should be every now and then stirred to keep the soil loose. This covering is done when the stalks are about fourteen or fifteen inches long: after the ground has been well cleared of weeds, a part of the shoots in each row are laid down in the intervals on the loose earth, and slightly covered with the same earth; observing, however, not to cover them entirely: the end of each shoot should be left out of the ground, or they will not grow, and the whole work would be thrown away. The intention of laying these shoots down † is, that they may be converted into roots, and thereby encrease the quantity for sale; but all the shoots

* Mr. Miller says, that the best time for planting madder is about the middle or latter end of April, according as the season is more or less forward, which must be determined by the young shoots; for, when these are about an inch and a half, or two inches above ground, they are in the best state for planting. He adds, that when the shoots are longer, they are very apt to droop upon being moved, especially if the season should prove warm and dry; and if their tops wither and decay, the roots will be greatly weakened. O.

† Mr. Miller, in his directions for cultivating madder, takes no notice of this method, used in France, of laying down the stalks

shoots must not be laid down, or the disproportion betwixt the stalks and the root would be too great.

This work may be done with great ease with the common implements: let a furrow be opened close to each side of the bed with a plow: in these the shoots are laid down, and covered slightly with a hoe.

None of the stalks of the madder should be pulled up the first year, as it would too much weaken the roots by disturbing them, and tearing off their fibres.

After laying down the shoots the first year, the madder-ground requires no farther care, except being kept clear of weeds; and in the autumn of the succeeding year it may be taken up *, in order to its being prepared for sale: the earth of the intervals must always be kept loose by tillage.

When the madder-roots are taken up, the whole land gets a thorough plowing, and some fresh roots or sets are regularly planted in rows, in the intervals of the former year; and when this second crop of madder is off, the land will be in fine condition to bear excellent crops of corn; for madder is no impoverisher of land, and the frequent tillage it requires, brings the land into fine tilth, reducing it into as small particles as the bed of a well-kept garden.

The best husbandry is, not to plant the same land in madder for many years afterwards †; and whenever it is again planted with that crop, it should be well dunged, manured, and tilled, the preceding year.

When the stalks begin to wither, that is, about the latter end of October, the roots are to be taken up; and the cheapest and shortest way of doing it, is to loosen the earth with a common plow, first taking off the earth-board and coulter: when the earth is thus loosened, women and children

stalks, in order to their being converted into roots: he mentions, indeed, the Dutch method of covering the haulm in autumn; but that is for a different purpose, *viz.* to keep the frost out of the ground. O.

* In Zealand they let it lie three years in the ground; but perhaps they suffer their roots to grow too large: we think the richness or poverty of the soil should govern this circumstance. O.

† The Dutch allow four years interval betwixt their crops of madder. O.

dren may serve to pick up the roots ; and wherever any difficulty occurs, the labourers turn up the soil with their spades.

But a much better, though rather more expensive method, is to have the earth of the beds turned into the intervals with a three-pronged fork : by this method the roots are taken up almost without damage ; and many which lie a little deep are saved, but which would otherwise have been left in the ground and lost ; and particularly most of the vertical or tap-roots are got up *.

When the roots are taken up, they are dried as much as possible in the air, afterwards carried to a kiln, and lastly to the mill to be ground.

A light loamy soil is better for madder than a rich strong clay ; it loves moisture, but is killed if it is overflowed : therefore, if the soil is in other respects proper, but too wet, it must be first drained, or, at least, the beds must be raised high, and the intervals sunk low ; on the other hand, if the land is too dry, the intervals may safely, and even profitably, be raised above the beds : this will at least prevent the young fresh planted sets from being hurt by too much drowth.

When the upper stratum of soil is deep, it is to be observed that the land cannot be stirred too deep : the only thing to be apprehended is the expence of doing it : the more the earth is reduced, the more nourishment will it afford to the roots of the madder ; they require a great deal : but in general madder pays well for any labour that is bestowed on it.

Dry

* Miller directs the roots to be taken up in the following manner. A deep trench should be dug at one side of the ground, next to the first row of madder, to make a sufficient opening to receive the earth, which must be laid therein in digging up the row of roots, so that there should be at least two feet broad, and two spits and two shovelings deep, and should be made as close as possible to the roots, without breaking them or cutting them in doing it : then the row of roots must be carefully dug up, turning the earth into the trench before-mentioned. In doing this, there should be, to every person who digs, two or three persons to take out the roots, that none may be lost ; and as much of the earth should be shaken out of the roots as possible : and after the principal roots are taken up, there will be many of the long fibres remaining below ; therefore, in order to get the roots as clean as possible, the whole spot of ground should be dug the same depth as the first trench ; and the pickers must follow the diggers, to get them all out to the bottom. N.

Dry weather is, if possible, to be chosen for taking up madder roots, as the earth then easily falls off them, and they need not be washed, which is to be avoided; and, in fact, there is no occasion to wash them, unless they grew in a stiff soil, and the weather was very wet when they were taken out of the ground.

Some judgment is required respecting the time of taking up these roots: I have already mentioned that they will, in general, be fit for use by the latter end of the second autumn; but this is not always the case; and it is much better to let them lie in the ground another year than to spoil a crop.*

The Dutch often take them up too small*, and the French almost as often let them grow too large. The two extremes are equally to be avoided: the proper time to take them up is, when they are about the size of a swan's quill; they then yield most dye, and are of course most proper for use. The time when they arrive at this proper state, depends not only on the nature of the soil in which they have been planted, but also on the good husbandry that has been bestowed on the land; for without proper tillage they will turn out but an indifferent crop; but if they are planted on a good loam, are well tilled during their growth, and have favourable seasons, they need never be left in the ground longer than the end of the second autumn, whether they are planted in the spring or the autumn.

I have mentioned in this letter many things which will appear trifling to you, when experience has made you more knowing in this culture; for, depend upon it, a greater portion of knowledge is acquired by a little experience than by a great many precepts; the first makes a deep impression on the mind, whilst the latter are soon chased away by new, and perhaps more pleasing, ideas.

I would recommend it to you, when you begin to plant madder, to depend more on the judgment you shall form of things, than on any thing you can read on the subject. If you miscarry in some instances, you will certainly rectify matters in your future practice: a sensible man cannot be long in the wrong.

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* We should imagine the Dutch madder must be large enough, as they generally leave it three years in the ground. O.

I have not, I know, given you any systematical instructions in the affair of cultivating madder; and this I purposely avoided doing; for, had I attempted telling you in what manner this useful plant ought to be cultivated in England, I should certainly have miscarried, and all I could have said would have amounted only to probable conjecture: had I, on the contrary, given you a circumstantial detail of our methods of practice here in France, it would only have served to mislead you, so much do the climates of the two countries differ. I am therefore in hopes, that my manner of treating the subject will be not only more agreeable, but more useful to you, as I have, for the most part, only mentioned such circumstances as may be equally useful in the culture of this plant in both countries.

Lay it down as a maxim, that the culture of madder, if properly managed, is very profitable; there are few crops pay better: but then the two extremes are to be carefully avoided; we must not let our expences be so large as that no crop will repay them; neither must we be so sparing as to balk the growth of the plant for want of proper tillage. A great deal is required, yet too much may be bestowed on it, for the reason above mentioned: the golden mean is best in this, as well as in all other matters; and what this mean is, can only be learnt from experience; for it is absolutely impossible to lay down maxims that will suit all countries, all climates, and all soils.

I have probably given both you and myself more trouble than was necessary in making these reflections, as a little recollection would have convinced me that you are far from being uninformed in matters that relate to agriculture; yet, as precepts, which are general, and in themselves good, cannot be too frequently inculcated, I know you will forgive me; and this knowledge it is that perhaps makes me so careless of offending you.

Be not backward in letting me know any thing wherein I can serve you: the regard I conceived for you, during my residence in England, would be a sufficient inducement for me to contribute all I can to your satisfaction, were I not, as I really and in truth am, bound to you by every tie of gratitude and respect.

Your behaviour to me, when I was unfortunate, and wanted assistance, I shall ever bear in mind; and what made it still more pleasing and acceptable, was your manner of conferring a favour, than which nothing could be more generous, nothing more truly humane.

I must say no more, lest I offend you with the overflowings of my heart: yet you will, I hope, permit me to assure you that nothing shall ever prevent my being,

S I R,

Your very much obliged humble servant,

Paris, Sept. 14, 1761.

DE SALENS.

NUMBER XXIX.

A Letter to the Editors, from a Member of the Society of Arts, hinting at a Method of extracting and preserving the Colour of the Madder-Root.

GENTLEMEN,

THE Society is determined, I find, to give all possible encouragement to promote the culture of madder in England: it is indeed an object worthy attention; yet there are many obstacles to prevent this culture from being generally practised: I shall enumerate a few of them, and afterwards hint at a remedy.

The farmers in general are an obstinate set of men; they are wedded to old customs, and have, besides, for the most part, an utter aversion to crops that occupy the land two * seasons: from these, therefore, we cannot expect much in this affair, as they will scarcely ever attempt the culture of madder till they are driven, as it were, into it by a prospect of immediate gain.

The garden-farmers, who live within twenty miles round the metropolis, must set the example: these, indeed, are, in general, a very intelligent set of men, ever willing to adopt any real improvement in their practice: yet, till the culture of madder turns out as profitable to them at least as any other of their ordinary crops, we cannot expect they should plant it.

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* Madder often occupies the land three seasons. O.

The lands about London are very dear; therefore the objection of the crop's occupying the ground two years holds still good; but this might be got over, provided the planter could have sale for his root immediately after it was taken up: this is far from being the case in the present practice; for it must be first dried in a kiln at a large expence, and then reduced to powder in a mill, before it can be brought to market: a long process for a busy farmer to superintend.

It is not to be expected that every farmer who cultivates madder, should erect a kiln to dry it, and a mill to grind it: these are expensive works, and would only answer in very large undertakings: yet, if he does not erect these hitherto necessary conveniences, what is he to do? Why truly he must carry his green madder to the next kiln, which may not probably be at any reasonable distance, and make the best bargain he can for himself; the dried root must then be carried to a mill to be ground, before it can be offered to the dyers for sale.

If the owner of the kiln imposes on the planter, he must either bear it with patience, or let his madder-root heat, ferment, and spoil, which it will do in a very short space of time; for it is very succulent and full of sap, inasmuch that, in drying, it loses at least six parts in seven of its weight, and sometimes more.

Some ingenious men in France have tried how it would answer to use the madder-root green for dyeing: it did very well; and, as they say, there was a saving of at least one half, allowing eight pounds of green madder to lose seven eighths of its weight in drying, and to be reduced to one pound, which is often the case.

In making the experiment of dyeing with the green root, it was found that four pounds, which would have been reduced to half a pound in drying, was equal in effect to a pound of dried root. This method, therefore, of using the green root, would be a great ease to the farmer, and a considerable saving to the dyer; but the misfortune is, that they seldom live near enough to each other to put this method in practice: a farmer, who might find it convenient in other respects to plant madder, might, perhaps, on enquiry prove to be twenty, thirty, or many more miles distant from a dye-

dye-house. This scheme, therefore, cannot be brought into general practice; though, where the situation is convenient, it may be profitably embraced.

To remove all the obstacles I have mentioned, which prevent the farmers from planting madder, I have formed an opinion, that an inspissated extract might be made of this root, which should retain all the useful qualities of the manufactured roots now imported in large quantities for the purpose of dyeing; and it would be only necessary to dissolve this extract in some proper menstruum, to prepare it for use.

In what manner this extract should be made I do not pretend to determine, especially as there are many gentlemen, members of the Society, who have a much greater knowledge in chemistry than I can flatter myself to be possessed of.

Would some of these gentlemen take upon themselves the trouble of examining how far, and in what manner, this scheme was practicable, there is not the least doubt but that the secret would soon afterwards be discovered, provided the Society was to offer a large premium for that particular purpose; and I own I think five hundred pounds would, in this manner, be very well bestowed, as it would, doubtless, be a great inducement to our farmers planting madder.

Should this secret be discovered, so as that the extract would answer all the purposes of the dried root, and with equal or greater certainty, the expence of the process in making it might very easily be calculated; and if it was not complicated, the farmer might prepare it himself on his premises immediately after taking up his root: if, on the contrary, it should require too much knowledge and nicety for him safely to practise, manufactories might be established for this purpose at proper distances, which would not fail being plentifully supplied with green root; and this the farmer might either sell to the owners of the works at a fair price, or pay them, after a reasonable rate, for their trouble in the process.

In Holland their soil is, for the most part, peculiarly adapted to the growth of madder; of course a great quantity of it is raised in a district: they have public kilns for drying it, and public mills for reducing it to powder;
and

and the neighbouring planters bring in their madder-roots to the works, where it undergoes all its preparations at certain reasonable, fixed, and well-known rates, the farmer having no farther trouble than paying his money, and carrying it thither and bringing it back.

This reduces the profits of a crop of madder to some degree of certainty, as a planter need only inform himself of the quantity of green root his crop amounts to in weight, to give a probable guess at what will be his profit.

With respect to England I am fully persuaded, that, if it is practicable to make an extract *, and as it were concentrate the virtues of the root, it is much the better way, as the commodity, though equally useful, would lie in a much smaller compass, be of lighter carriage, and soon be as well cheaper, as in much greater plenty, in this island.

It is quite unnecessary to enlarge on the many advantages to be derived from this matter if brought to bear: they cannot but be evident to you, the Society, and the public; I shall therefore conclude myself, GENTLEMEN,

Your very humble servant,

Aug. 14, 1763.

A SILENT MEMBER.

NUMBER XXX.

A Letter to the Editors, on the different Uses to which the Leaves of Trees may be applied.

GENTLEMEN,

THE subject I propose to write on, may appear to us in England of little consequence; yet I think it may be well worth our attention when set in a proper light.

It is not my intention to treat, at this time, of leaves as organs that are necessary to vegetation; I shall take them under my consideration only when they become no longer necessary to the plants of which they are parts.

We suffer our leaves to fall and rot on the ground, without making, in general, any use of them; whereas, were they carefully gathered before the fall, and dried, which would be no great expence, they might, upon occasion, serve as fodder for our cattle, as manure for our land; we might make

* Perhaps it would be possible to prepare madder for dyeing after the manner of indigo.

make hot-beds of them; they would serve instead of saw-dust to preserve our wines in dry vaults; and if I am not mistaken, oak leaves might be a very good substitute for the bark in tanning leather.

When we intend leaves as fodder for cattle, they should be gathered just before the fall, and frequently turned and dried like hay; after which, if they are kept from moisture and wet, they may be with ease preserved through the winter*.

This will best answer in the neighbourhood of large woods and forests, where there are plenty of trees, and where of course the labour of gathering the leaves will be but of little value. Cows eat these dried leaves with a good appetite; and there cannot be a better, nor a cheaper fodder, to support ewes through the hard winter's weather. Where a farmer, who has a right of commonage, breeds a large number of sheep, he will be glad of such a resource, in a hard winter, to save his hay: if the sheep have not some dry fodder, very many of them drop in the winter.

I cannot say that I have had any great experience of the use of leaves as a fodder†; yet I know they may be so applied, and are wholesome food: I have dried some in small quantities, and given them, for several weeks together, both to cows and sheep; they eat them freely, and seemed to be every way in as good health as when they were fed with hay.

So much for my little experience; but in France the case is otherwise; they annually consume leaves there in large quantities as fodder for their cattle, and find them thrive well with it.

On the borders of the forest of Orleans, as well as in many other provinces, this practice is highly approved of, and stands generally recommended among the inferior farmers,

* In France they give many sorts of leaves to their cattle. Their cows are very fond of the leaves and tender stalks of the madder: this food makes them yield abundance of milk of a good quality; but it has a reddish colour, and the butter made of it, though very good, is yellow. They give also to their cows the blades or leaves of the saffron plant; but these give the milk a disagreeable taste. N.

† Our correspondent does not attempt to distinguish what leaves are wholesome, and what the contrary: we should be apt to imagine,

mers, who have no great plenty of other more valuable fodder.

I would willingly recommend this practice to some of our English farmers: it is a great pity any thing should be thrown away that can be of the least use; and I have often, in a woody country, seen the leaves of the trees rotting on the ground in autumn; and when I have gone there the winter following, I have seen the poor sheep and half-starved cows crawling on the commons, and almost perishing for want of that nourishment which the leaves of the preceding autumn, if properly preserved, would have afforded them.

To say the truth, it would be a very good practice was every farmer to preserve and lay up in the autumn as many leaves as he conveniently could. No man can answer for it, but that his fodder may, by some accident or other, run short: should this be the case, the leaves would undoubtedly be of very great use, and might even be a means of saving the lives of many of his cattle: but suppose even that the leaves should not in the winter be wanted as fodder, they will then serve as an excellent manure *, being laid to rot in alternate beds with good earth. In this manner they make a much better manure than either wheat or barley straw, as they abound more with vegetable sap, raise in the earth a more uniform and temperate fermentation; and for this reason the effects they produce are more lasting.

Another great advantage they possess as a manure is, that you are sure of not stocking your land with weeds by the use of them: this cannot be said of any of the common kinds of dung.

I shall mention another use to which the leaves of trees may be applied by the poor, if they are first properly dried and gine, that though they may most of them be good fodder, yet some of them are better than others; and doubtless what would agree very well with horses, oxen, or cows, may not be so proper for sheep: we should therefore be glad if our correspondents would give us some information on this head, that, if any farmer should chuse to save and cure some of this fodder, he may know what kind to prefer, so as to suit best his own convenience and the state of his flock. O.

* Leaves, when mixed in a compost, undoubtedly make an excellent manure; it would therefore be worth while to gather them, was it only for this use. R.

and prepared ; I mean that they may serve instead of straw, flocks, or feathers, for beds, bolsters, and cushions : nothing can be cheaper for this use, and nothing can be wholesomer or easier. I have had some experience of it, and find that when leaves are applied to this use, it is best for them to receive some wet in the drying, whether by rain or by water thrown on them is immaterial : this makes them of a tougher contexture, and prevents their falling, by frequent shaking, into dust.

So much for the uses to which leaves may be applied by the farmers and the poor : but this is not all ; the gardeners may find them answer a very good purpose : I mean, as I have before observed, that they are very proper for making hot-beds, instead of horse-litter or tanners bark. I know they may be applied to this use, because I have tried it. It is only necessary to tread them very close in the bed, and give them a proper degree of moisture : they heat gradually ; and their heat is, I think, more equable and permanent than that of horse-litter, there not being so much danger of burning and suffocating the plants in the frame. The effect of them nearly resembles that of tanners bark.

I have also applied these leaves to another very different use ; that is, as a substitute for saw-dust, to put among my bottles in my wine-bins in my cellar : they serve very well for this purpose, as my cellar is dry ; and I the rather chuse to make use of them, as they are easily procured, which is not the case with saw-dust ; for I have been often very much puzzled to get a few sacks, as I live at a considerable distance from any great town.

I have but one thing more to mention relative to the uses of the leaves of trees, which is, that I have great reason to think that oak-leaves may serve, instead of oak-bark, for tanning leather : I cannot say I ever tried them in this intention, because I am not acquainted with the process used in tanning ; but I have frequently soaked them for a considerable time in water, and found the water strongly impregnated with their qualities : it had a dark colour and a taste remarkably astringent *.

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* We could wish some of our correspondents or readers would try the experiment, and communicate to us the result. O.

I cannot but persuade myself that the juices of the leaves of the oak have nearly the same qualities as the juices that are to be met with in the bark of the same tree; and, if so, why may not their effects on limed hides be the same? I do not know whether any one has ever made the experiment: if it has been made, I should be glad to see an account of it in some future Number of your collection. I am,

GENTLEMEN,

Oct. 6, 1763.

With great respect,

Your very humble servant,

A COUNTRY GENTLEMAN.

NUMBER XXXI.

A Letter to the Editors, from an Old Member of the Society, recommending the Establishment of Magazines of Wheat at Gibraltar and Mahon.

GENTLEMEN,

AS your plan seems to comprehend every thing that can tend to the public good, I shall not, needlessly, make an apology for troubling you. The intention of my writing is to recommend the establishment of magazines of wheat at Gibraltar and Mahon.

It may, perhaps, be asked, of what use will these magazines be? I say, they will encrease our trade, and bring money into the nation; for I would not be understood to mean, that these magazines should belong to the public, and be for the use of the garrisons: no, I would have them the property of a company of merchants.

It is well known that in Barbary, Turkey, Italy, and the Levant, though they have generally large crops of corn, still there is, for the most part, a dearth and scarcity once in six or seven years: at these times wheat sells at a great price, and happy are they that have most of it.

By what has been said it will be evident, that were there magazines established in the places above mentioned, a great profit might every now and then be made of the corn contained in them; and in this trade there would be

no hazard, because there would always be a valuable stock in hand.

The only question then would be to find proper magazines to contain a sufficient quantity of corn; and than this nothing could be more easy; and so it must, I am certain, appear to those that know how wheat is, and has been preserved in many parts of France, Italy, and Sicily. The climate of those countries is very hot, the wheat ripens well, is got in dry, and is well adapted for keeping.

Immediately under the upper stratum of earth, the inhabitants * frequently find a hard dry rock, (this is the case both at Gibraltar and Mahon): in this they dig a large deep cell or cove, as it is called, taking care to fashion it so as to have a small narrow aperture or mouth. In this cove they shoot their sacks of wheat, after it is dressed and fit for the mill: when it is full, the surface is but small: this they frequently sprinkle over with quick-lime, which being by the action of the air soon reduced to dust, heats the corn, and occasions the grains near the surface to sprout and send forth long blades: these soon decay, and form together with the lime a thick coat, which keeps the remainder of the corn from injury: the cove is then covered with a stone, and left for perhaps an hundred years: in fact, it is impossible to say how long it will keep in this manner †.

It is no uncommon thing in Italy to discover these coves full of good corn by accident, when it always turns out a

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* At Chalons, in Burgundy, they have granaries where they still keep corn thirty or forty years: over the heap they strew quick lime in fine dust, to the thickness of three inches, and sprinkle this over with water, whence arises a crust. The grain near the surface sprouts to the height of a foot and a half: these the winter kills, and the heap is left untouched till necessity obliges them to use it. R.

† A little time after the siege of Metz, under Henry the Second of France, the Duke d'Espernon laid up vast stores of corn in the citadel, which was preserved in good plight till the year 1707, when the French king, and his retinue, passing that way, they made bread of some of it, eat it, and found it very good. A crust was formed on its surface, by the germination of the grain next underneath, to the thickness of an inch and a half. The town's people commonly walked on it without its giving the least way. R.

treasure to the owner of the land. But I cannot illustrate this matter better, than by relating an affair which happened no great number of years ago, the truth of which many gentlemen of great fortunes and known veracity, in this metropolis, can testify.

The Marquis of Bonaretti was formerly a merchant in Lisbon. After having with great reputation acquired a very considerable fortune, he retired to spend the remainder of his days in his native country, and purchased an estate in the neighbourhood of Naples.

The mansion-house of this estate being old, and out of repair, the Marquis ordered it to be pulled down, intending to build another more sumptuous on the spot.

When the workmen came to the foundation, they discovered a large square stone: this the surveyer would not suffer them to touch till he had sent for the Marquis.

The stone being raised, exposed to view a large cove of very fine wheat. With this wheat the Marquis freighted several ships, which he sent to Lisbon, and other places.

It was sold in the public markets, and declared, by every purchaser, to spend as well as if it had been of the last year's growth.

This cove of wheat turned out to be of such consequence, that the family which had sold the estate to the Marquis of Bonaretti, brought their action against him for an account of the produce: he pleaded that it was not deposited there, either by them or their ancestors; on which account it could not belong to them: on the proof of this he rested the issue of his cause.

This family had been forty years, and upwards, possessed of the estate; but the Marquis cast them, because they could not prove any right to it.

When this matter was decided, the family that was before them possessed of the estate, for above seventy years, commenced their action; but with as little success as the former, for they could not trace any the least circumstance which gave the court reason to imagine the cove was filled with wheat by any of their ancestors; though at this last trial, some of the witnesses, who deposed as to their knowledge of the several possessors of the estate, were upwards of fourscore years of age.

Thus,

Thus, in these two trials, it was evidently proved that this wheat had been deposited there near 120 years before, and how much longer it was impossible to determine *.

The Marquis de Bonaretti's right to it was judged to be indisputable, as the former possessors might as well have claimed a right to a gold mine (if one had happened to have been found there) which their ancestors had never opened, nor knew any thing of.

Many persons who bought some of this wheat at Lisbon, were curious enough to have it ground into meal, and made into bread under their own immediate inspection; and they have often since declared that the bread was as good, and as well tasted, as any they had ever seen.

But to return to my first subject, nothing could, I think, be more expedient than to establish the magazines I recommend both at Gibraltar and Mahon. Gibraltar is almost an entire rock: the expence of digging the covers would not be any very large sum; it might very well be done by the soldiers in garrison, doubling their pay whilst they were about this work; and the coves, which would then be the property of the government, might be let to the merchants at a certain moderate rent.

The same might be done at Mahon, and in the same manner.

These magazines would not only answer the purpose of keeping wheat for the merchants in time of peace; but they might also serve the government, in time of war, to keep ammunition, provisions, and warlike stores for the several garrisons: these necessary articles would here be secure from danger, from the falling of bombs, by which many magazines of powder are blown up; provisions might be laid in greater plenty; and with such assistance it would be almost impossible to determine how long a fortress could withstand the regular attack of even a royal army.

I mean this letter only as a hint, to be enlarged on by some of your correspondents.

As

* At Sedan, in Champagne, on the confines of Luxemburg, in France, there was a granary cut in a rock, wherein a heap of corn was preserved 110 years. It was covered with a crust a foot thick. R.

As to the affair of the Marquis of Bonaretti, somebody may, perhaps, inform you of more particulars relative to it than I have been able to recollect, for my memory is not so good as it has been. Excuse, Gentlemen, this hasty production from

Your most obedient servant,

London, Oct. 3, 1763.

A MERCHANT.

NUMBER XXXII.

A Letter to the Editors, relative to some Trials, made last Harvest, of the Brabant and Hainault Scythes for mowing Wheat.

GENTLEMEN,

IN reading your first publication, I find by the contents of No. IV. that you had not then received any relation of the trials that were made in this county, last harvest, of the Brabant and Hainault scythes for mowing wheat.

A gentleman, a foreigner, came down here to a neighbour's of mine, in order to put us into a method of going about this work.

Many trials were made in the presence of myself, and a great number of others: the scythes did their work well; they cut the corn within two inches of the ground: and though our workmen were of course a little awkward, scarcely any ears were scattered: but the greatest advantage is, that a man with one of these scythes can cut down, at least, double the quantity of wheat in a day, he can with a sickle or hook *.

The chief objections made to the introduction of this method were, that the stubble is left too short, and on that account is not fit for thatching; that the weeds are cut with the corn †, and will be apt to mould or heat, and the seeds to mix with the corn in threshing; and that the poor are deprived of their gleanings, as none of the corn is scattered.

But

* For the method of using the wheat-scythes, described by Mons. de L'Isle, see page 20. of this collection.

† See pages 21 and 22.

But these objections must soon fall to the ground, when we reflect that, by mowing, the straw is much longer, and certainly straw is much better for thatching than stubble*.

As to the weeds being cut with the corn, it is of no consequence; for they are easily shaken out of the bottoms of the sheaves, after drying a day or two; and the sheaves may be safely left to dry, if they are laid in the following manner†.

Suppose three tobacco-pipes to represent three sheaves, the bowls to be the feet of the sheaves, and the small part the ears: lay one of these on the ground; then take another, and lay the bowl of it under the small end of the first; take afterwards a third, and disposing them in form of a triangle, lay the bowl of the third under the small end of the second, and the bowl of the first under the small end of the third: by disposing them in this form, the ears are always kept from the ground, and will endure a great deal of wet without damage.

As to the seeds of the weeds being threshed, and mixing with the corn, that may easily be avoided; for the wheat, by this method of mowing it, is so regularly disposed in the sheaf, that the sheaves need only be threshed on the ear, without being unbound.

The objection, that the poor would be deprived of their gleanings, is a mere farce: their time might be much better employed; and by the same parity of reason, the more corn the farmer left for them in the field, the more justice he would do them; and this few would venture to assert, as custom might in time extend it to half the crop: besides, as by this new method a great deal more corn will be inned, it will of course be cheaper the year round, and easier purchased by the poor.

The foreign gentleman was of great use to us: he is intelligent and communicative, and we all of us acknowledge ourselves much obliged to him.

Many in this county propose making more expensive trials of it next harvest, and there is no doubt but that in the space of a few years it will be brought into constant use ‡.

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* See note under page 18.

† See the note under page 21.

‡ See No. 4. page 17. *passim*.

A short certificate of the advantages resulting from the practice of this method, was some time ago drawn up: it was presently signed by a number of gentlemen, farmers, gardeners, labourers, &c. and transmitted to Dr. Templeman, secretary to the Society of arts in London, to be, if necessary, published for the benefit of the kingdom. This new method * will, doubtless, be introduced to the knowledge of the English world with a better grace, coming under the sanction and recommendation of so respectable and useful a society.

Believe me to be, GENTLEMEN,

Your very humble servant, and well-wisher,
Northamptonshire, W. H. Farmer.
Oct. 10, 1763.

* The editors are happy, that, as members of the Society, they have an opportunity of conveying to the readers of this collection a perfect idea of the form of the scythes lately tried in Northamptonshire: for this purpose they have annexed a plate engraved from a drawing taken from the three scythes now deposited in the Society's machine-room, for the inspection of the curious. The parts are represented separate, that they might be more distinct: the dimensions and proportions follow. Fig. 1. is the handle, or mounting, of the largest scythe: the length of it from *a* to *c* is eight feet, from *a* to *b* five feet, from *b* to *c* three feet: at *c* is the part whereon the blade is fixed: *d* shews the two bends which serve instead of a cradle. Fig. 2. is the blade to this scythe: from the heel *a*, to the point *b*, measures three feet, and it is two inches and a half broad: when the scythe is mounted, from the point of the blade *b*, to the end of the long handle *a* measures an angle of seven feet. Fig. 3. is the blade of another scythe, the length and breadth the same as the last blade. Fig. 4. is the handle to this second scythe: from *a* to *d*, it measures three feet ten inches, from *a* to *b* two feet, and from *b* to *c*, one foot seven inches: the blade is fixed at *a*, and when the scythe is mounted, the angle from the point of the scythe-blade to the end of the handle, measures three feet nine inches. Fig. 5. is the blade of the smallest scythe: from *a* to *b* it measures one foot nine inches, and is two inches and a half broad. Fig. 6. is the handle or mounting to this last scythe: at *a* the blade is fixed: from *a* to *b* is one foot five inches and a half; the angle from *b* to *c*, four inches and a half; from *c* to *d*, five inches; from *d* to *e*, three inches and three quarters. Fig. 7. is the gathering-hook: the length of its handle, from *a* to *b*, is three feet nine inches; the hook, from *b* to *c*, is ten inches long. We shall defer giving the mechanism of mowing with these scythes till another opportunity, in the mean time shall be glad to hear from such of our correspondents, as have seen them at work, on the subject. N.

Museum Rusticum, &c.

For NOVEMBER, 1763.

THE THIRD EDITION,
Revised and corrected by the EDITORS.

NUMBER XXXIII.

*A Letter from an Essex Farmer to the Editors, on the Decay
of Timber in that County.*

GENTLEMEN,

HAVING seen and approved of what has been published of your work, I hope you will not refuse me the pleasure of being proclaimed as your correspondent: I would wish, as well as others, to do my country service; and, indeed, the thoughts of a plain man are not always to be despised.

You, Gentlemen, seem to have different notions of things; for I find you attend more to the utility of the subject, than the elegance of the style of your correspondents letters: this encouragement, it is, has induced me to aim at appearing in such good company.

I live, Gentlemen, not far from the borders of Tiptree-Heath, in the county of Essex, where I hold a considerable farm, and have besides, of my own, a small freehold plot, worth about fifty pounds a year; yet am I content with the humble title of yeoman, without aspiring to that of gentleman, as many of my brother farmers in this county are very apt to do.

My present farm I have occupied many years, though I am not an old man; and I have of course seen many petty

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revolutions, even at such a distance from the metropolis; but the greatest revolution of all, I intend making the subject of my present letter.

When first I began to make observations on men and things, I remember there was great plenty of timber within ten miles round about my neighbourhood; but this is no longer the case: what it is owing to, may not indeed be quite so apparent.

Almost all the farms were well wooded; for, besides the copses and groves of fine timber, which were every where to be seen, many thousand fine sticks grew in the hedge-rows. These hedge-rows were formerly thought to be of service, not only to shield the crops from blasting winds, but to shelter the cattle in the cold winter's weather.

Our methods are now greatly altered, amended they say; for, instead of hedge-rows, they will scarcely suffer a stem of white-thorn to grow: *A quick-hedge, say they, exhausts the land, and starves all that part of the crop that is within its reach*: so that our fences now consist chiefly of a ditch, a bank, and a dry hedge; for they plow up to the stake, that they may not lose an inch of land.

I am no advocate for your slothful slovenly land-holders, who would suffer their land to be over-run with thorns and thistles; yet I cannot but think that every thing may be carried to extremes; and this has been the case in the affair I am now writing of: the landlords seemed to encourage their tenants to become what we call neat farmers, by cutting down the timber* on their lands, though the true reason of their conduct was, the desire of recruiting their almost empty purses.

Had you, Gentlemen, like me, seen, about twenty years ago, great quantities of fine elm for keel-timber, stout oak knee-timber, and planks without number, shipped at the port of Malden, in order to be carried to the king's dock-yard, you would undoubtedly join with me in regretting the destruction of the fine woods in which this timber grew; woods, which lay so convenient for water-carriage, that they

ought

* The timber has been in many counties too much destroyed by grubbing up the hedge-rows, and cutting timber in woods before it attains a proper growth. N.

ought to have been preserved for the use of the navy, though an act of parliament had passed for that particular purpose.

How small are the remains of the many fine woods which formerly bordered on Tiptree-Heath? How were the trees cut down by thousands some years ago in Kelvedon-Hall wood? What is Chiffel-Grange to what it once was? And how little good timber is left in the parishes of *Tollebury, Tollehunt-darcy, Tollehunt-knights, Beckenham, Layer, Fering, Messing, Salcot, Malden, &c. &c. &c.*? places which formerly were almost an entire grove.

I am no enemy to reformation: there might, perhaps, in those times, have been too much wood; but I am sure I am now warranted in saying there is far too little *.

Were the lands which have been cleared, of a fine rich soil, and more proper for tillage than timber, I should not think there was so much reason for complaining: but when I find these lands in general of such a nature, as to yield much less clear profit by tillage than they did by timber and underwood, we may surely venture to assert, that the woods had better not have been grubbed up †.

Y 2

This

* When a country happens to be over wooded, the madness of clearing it is often carried to excess. We have had many instances of this in England: and in some of our American colonies that border on the sea, the timber is so far destroyed, through this madness of clearing, that even fire-wood is excessively dear; a horrid mistake! which one would scarcely have thought any men of common forecast could have been guilty of: but the misfortune is, that present profit, in general, gets the better of every other consideration. R.

† When a gentleman is about to grub up a wood, and convert the land to tillage, he should, before he takes his final resolution, be particularly attentive to circumstances. It is necessary first to make an exact calculation of the profits annually resulting from the wood: the nature of the soil should be examined, to see if it is proper for tillage, and whether there will not probably be a loss by converting it to that use; independent of the hazards from bad crops, bad seasons, and failing of tenants. These matters entirely regard the land-owner; but he should also have some regard to the public interest, and enquire whether the county is not already too thinly wooded, and whether the grubbing his wood, if of any size, may not greatly affect the price of faggot-wood and billeting for the poor; and if it is an inland county, this is of the more consequence, as it cannot be so easily supplied with coals; the poor cannot afford to be at any great expence for their firing. N.

This frenzy is carried to such a length, that I could mention to you several farms, not many miles distant from that I occupy, which will not supply the tenant's kitchen with fire-wood; and the landlords, on this account, allow a certain deduction in the rent to buy coals.

I cannot yet bring myself to think, but even a proper number of hedge-rows may be useful on a farm; and I am sure a little copse or wood is a desirable thing.

My plowed land I keep as clean as any body's, being no sown in my natural disposition; yet I have often taken it into my head, that a lucky hedge-row has saved me now and then thirty acres of wheat from being blasted, when my neighbours crops, which were more exposed, were, in a manner, totally ruined.

But, Gentlemen, to be more serious, I think it a point of national concern, that all woods, which are within reasonable reach of water-carriage, should be preserved for the use of the navy: our ships are not built so cheap as they were formerly, owing to the almost unaccountable and sudden decrease of the timber fit for that purpose.

We might, with proper care, supply ourselves with good pines for masts, fine elm for keels, and excellent oak for knees, planks, &c.

That a remedy in this matter is necessary, has been long allowed: is it not, therefore, surprising, that something effectual has not been done in the affair before it is too late?

It is not easy to calculate how many acres of crown land there are in the kingdom, which do not produce a single guinea of rent in a year to the king: a great deal of this land lies in a proper situation for planting timber, to supply the future wants of the navy; and to what better use can it possibly be applied?

Let every man speak of what he knows: I am, and always have been, informed, that Tiptree-Heath is crown land: this is a large tract of land, several miles wide, and many long, which lies betwixt the great road to Colchester, and the towns of Malden and Tollesbury: it contains many thousand acres of land, that would support and nourish some hundreds of thousands of good timber-trees, such as oak, elm, ash, firs, and pines.

Its

Its being so near the port of Malden, makes it very convenient for water-carriage to London, or the several dock-yards on the Thames and Medway. I would therefore recommend, that this heath be immediately planted with such kinds of timber as may be thought proper, at the expence of the government, and that it be inclosed and preserved for the use of the royal navy alone; for perhaps by the time this timber is fit to fell, the government may be glad of such a resource; at least, I am certain such a supply will be welcome, if the present fashion of destroying woods lasts much longer *.

I cannot see that any body could reasonably object to my scheme, for planting Tiptree-Heath with timber: it is true, there are a few cottagers live on it; but these, were they at all industrious, could get a much better livelihood by removing into the neighbourhood of the villages, where they would not fail being employed, at good wages, in the several works of husbandry.

The only murmurers would, I believe, be some borderers who have been free enough to enclose land from the Heath: these, perhaps, would expect to have their title to such land enquired into; and this would prevent their giving a willing consent to the planting of the Heath with timber. But private interests, let them be of what nature they may, should always give way to the good of the common weal.

If you think my thoughts of consequence † enough, you will of course insert them at a proper opportunity in your collection: if they should not be so far honoured, it will be a lesson of humility to me, and teach me not to set too high a value in future on my own idea of things.

You will, however, I hope, believe me to be, with great respect,

GENTLEMEN,

Witham, Oct. 7, 1763.

Your humble servant,

I. K.

* We imagine it might be of great future use to plant many other tracts of crown land in the same manner, provided they lay convenient for water-carriage. O.

† We should be glad to hear from this gentl man, whenever his leisure permits him to oblige us with his letters. N

NUMBER XXXIV.

A Letter to the Editors, from a Member of the Society, on the Obtaining of the Lake-Red, used by the Painters in Enamel, by a cheaper Process, and from less valuable Materials.

GENTLEMEN,

IT has, it seems, been thought an object worthy the Society's attention, to publish a premium for the discovery of a more cheap method of obtaining the fine red colour used by enamel painters. That commonly made use of is a preparation from the finest gold *: this must of course enhance the price of the colour, and thereby make the portraits, or pieces painted in enamel, be much dearer to the purchasers.

Many have attempted to remove this obstacle to the progress of the art, but hitherto with little success.

A very great man in this way of painting was the late Mr. Zincke †: he knew the disadvantage his fraternity laboured under in using so expensive a colour; but his time was

* The lake-red used by the painters in enamel, is composed of fine gold dissolved in aqua regia, with sal armoniac, or common salt. The dissolution being compleated, it is put in a cucurbit with spring-water and mercury, over hot sand, for twenty-four hours. The powder remaining at the bottom of the cucurbit when the water is poured off, is ground up with double its weight of flower of sulphur, and put in a crucible over a gentle fire; and when the sulphur, which takes fire, is exhaled, the red powder remaining is ground with rocaille. The vermilion-red is made with vitriol, calcined between two crucibles luted together; then washed in aqua fortis, and afterwards in fair water: the fire is to be moderate. and to remain about half an hour.

† We are indebted to the French for this art of painting in opaque enamel; nothing of the kind having been attempted before the year 1630, when James Touten, a goldsmith of Chasteaudun, first discovered it: he communicated the secret to his fellow artists, who, in their turns, contributed to the bringing it to perfection. The first who distinguished himself was Dubie, a goldsmith, who wrought in the galleries of the Louvre. After him came Morliere, a native of Orleans, who applied himself chiefly to the painting on rings and watch-cases. His disciple, Robert Vauguer, of Blois, exceeded them all, both in his designs and his colours. After him Pierre Chartier, of Blois, applied himself to the painting of flowers, wherein he succeeded to admiration.

was so much taken up by his business, that he could not attend to the experiments that would be necessary to make the wished-for discovery.

When Mr. Zincke was in his greatest eminence, a young man of extraordinary genius, by name *Gamble*, was bound to him as an apprentice: his application to business, during the time he served, was truly wonderful; and the progress he made surprised even his master, though he was no stranger to his uncommon talents.

Mr. Zincke thought he saw in his pupil the beginning of great eminence, and was determined to be the first to encourage so promising a genius. Some little time therefore before the term of young Gamble's apprenticeship was expired, Mr. Zincke made the following proposal to him, *viz.* That if he would continue with him as an assistant, he would give him his board, lodging, keep him a servant, and a couple of horses, and allow him besides 300 l. *per annum* *.

Youth is naturally ambitious; and this was a great temptation, especially as the young man could not hope to make at first near so much by entering into business for himself: however, he declined the proposal.

His motive for so doing was, indeed, out of the common way; the road to riches, eminence, and fame, lay open before him: he might worthily have succeeded his great master in his business, and passed a life of industry in affluence and ease.

The best painters in enamel have always prepared their own colours; Mr. Gamble was therefore of course acquainted with the nature of each process: his whole ambition was turned to a desire of improving the methods of making the colours

* We have in England had several very eminent artists in this way: in fact, portraits were first painted in enamel in this island. M. Felibien acknowledges, that the first and most finished portraits, and those in the finest colours, were brought into France, by Petitot and Bordier, from England. This occasioned Louis Hance and Louis du Guernier (two good painters in miniature) soon after to attempt the like; in which the latter succeeded beyond every body that had gone before him: he likewise invented several new tints for the carnations, and, had he lived, would probably have merited the glory of carrying the art to its last perfection.

colours then in use ; and this was the true motive of his declining Mr. Zincke's proposal.

Laying aside therefore his painting, he assiduously laboured for many years to accomplish his wished-for end : he soon improved many of the colours *, and shortened the process used in making others : had he been content with this newly-acquired knowledge, he might still have been rich : but this was not his aim ; one thing was yet wanting, that is, a cheaper way of procuring a fine lake-red than that used in common practice.

He was industrious, indefatigable, and persevering ; and by these qualities, added to his extensive knowledge in the subject of his search, he hoped to surmount all obstacles.

His diligence was really surprising for several years, when poverty, of which he had yet formed no idea, for some time put a stop to his labours : he soon, however, reassumed them with added vigour ; he struggled with every disadvantage of fortune, and after about twenty years intense application, accomplished his long wished-for purpose.

It might naturally have been imagined he would now have tasted the sweets of his long study, but in this he was disappointed ;

* The composition of the several colours used by enamel painters, is as follows : *white*, which is the basis, is the finest crystal glass, made of the best kali from Alicant, and sand vitrified together. To these are added tin and lead in equal quantities, calcined by a reverberatory fire : this is prepared by grinding and cleaning it with aqua fortis ; after which, washing it well in fair water, it is ground and pounded afresh in a flint or agate mortar.—The *ruddy brown* is made with fæces of vitriol and salt-petre ; or with iron rust well ground on an agate with oil of aspic.—*Black* is made with perigeux, well calcined and ground with oil of aspic, to which is added an equal quantity of the goldsmith's black.—The *yellow* is made by adding iron rust to the white.—*Blue* is made of the lapis lazuli, well purified and prepared with spirit of wine, and exposed in a bottle five or six days to the rays of the sun.—White copperas calcined makes an amber colour. These colours, together with the two reds mentioned in a former note, by a discreet mixture and combination, serve for the composition of all the rest. The colours are laid on with the tip or point of a pencil, as in miniature, with this only difference, that they use oil of aspic instead of gum-water to dilute them. They set and polish their enamel, when laid on, by a reverberatory fire.

pointed: for when he came to apply for employ, he found it no easy matter to get proper recommendations: his master, the great Zincke's former employers, were many of them dead, and his own friends had almost forgot that he ever had a being: his dress was not such as would prepossess any one in his favour, and his address was not the most polite: his attending so closely for so many years to study, had prevented his allowing himself time to make proper observations on men and manners.

He was honest, but blunt in his conversation: he was sensible, but no ways communicative: he was good-natured, but captious for want of knowing more of the world: he was capable of doing great things in enamel-painting, but knew not which way to employ his talents to advantage: he could praise, but he could not flatter: he was a judge of merit, and ever willing to encourage it; but, unfortunately, seldom had it in his power: he could commend a brother-painter's performances without envy, and recommend him to the notice of good judges with sincerity*.

I am sorry I cannot conclude this narrative of Mr. Gamble with telling you that he arose suddenly into the eminence he so much merited, and had so dearly earned; but this unfortunately was not the case: I knew him for several years struggling with misfortune; and whenever he got employed, it was by the middling sort of people, and at an under price, for want of his being better known.

I cannot now say whether Mr Gamble is dead or living: it is ten years since I have seen him; and he may, for any thing I know to the contrary, with all his merit, with all his knowledge, be still getting a precarious subsistence, by such as have no taste to distinguish what share of praise, as well as reward, is due to him.

I should not have mentioned this Mr. Gamble to you on the present occasion, but that I imagine him to have been the first discoverer of an improved method of making lake-red, for the use of enamel-painters.

He may, perhaps, be dead, and his secret may have died with him; yet is it worth enquiry: if he is still alive, the

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world

* This character of Mr. Gamble might with justice be applied to many men, who, though ingenious, are unknown.

world ought to be greatly obliged to him for his incessant study and important discovery; and there is no doubt but that if he is past his labour, either through age or infirmity, he will be enabled comfortably to support the few remaining years he may have to live.

Some may, perhaps, curiously ask who this Gamble was, and what evidence can be produced of his extraordinary merit? Such I willingly refer to Mr. Hogarth, who formerly knew him well, and was no stranger to his good qualities and great abilities and knowledge in his profession. Believe me, GENTLEMEN,

Your very humble servant,
London, Oct. 3, 1763. A Friend to Merit, though obscure.

N U M B E R XXXV. }

A Letter to the Editors, respecting the most certain Tokens of a Coal-Mine being on an Estate.

GENTLEMEN,

I HAVE a little estate in a county where I do not know of any coal-mines being worked; yet, on looking over my land some years ago, I took it into my head that there were coals to be met with in it at no great depth. For my particular part, I acknowledge myself to be no great judge in the affair; you may, therefore, well imagine I would not set to work in digging a pit, till I could go upon a more certain foundation.

I know it is, in these undertakings, very necessary to disburse a large sum of money before one can expect any returns: this I am able to do, provided there is any moral certainty of success: I would, you must know, chuse it should amount to something more than a bare probability; for should I suffer any very heavy loss, it might be of great hurt to my family.

Having still my favourite scheme (for such I own to you it is) in view, I, last summer was twelve months, made a jour-

ney down into the North, in order to converse with some of the ablest overseers of the coal-works, as well as to make my observations on the nature of the soil, stones, turf, &c. of the land where the coals were found; but in neither of these did I meet with the success I could have wished.

I met with many very sensible men among the overseers of the works; but, under all the appearance of openness, I found they were too wise to be indiscriminately communicative in their conversation; they were reserved without appearing to be so; and they were frank, and spoke their minds on every subject, but on that which could be of any use to a curious enquirer.

When I found there was no good to be got this way, I made an agreement with a very intelligent workman, to give him a certain sum of money, and bear all his expences, provided he would survey my land, and undertake, on certain conditions, to open a pit for me if it should be found expedient.

I cannot say I had any reason to complain of this man's behaviour, though I am still as little satisfied as ever. He came to my house, and was with me a fortnight: we frequently walked over the land together; but his observations were so cursory, that I thought it impossible he could be a judge whether there were coals on the land or not: however, he assured me there were coals, though he could not exactly tell at what depth, and that he was ready to perform his contract, and open a pit if I thought proper to employ him.

I did not imagine, as I have already observed, that he had made observations sufficiently accurate to enable him to judge of the matter; but in this I was mistaken; for I was informed by my servants, that he was out every morning before sun-rise, and sometimes for two or three hours even in the dead of the night.

I remonstrated to him, how unreasonable it was that I should disburse so large a sum of money, as I must necessarily do in the undertaking, on the credit of his single assertion; and requested he would inform me, by what certain and unerring tokens he could be so sure there were coals in the

estate, and why he should not permit me to accompany him in his real observations, when I alone was the person who could be ruined by the experiment.

His answers were far from satisfactory ; he told me it was impossible for him to impart his knowledge, as it would be in him a mere act of madness ; that his livelihood depended on his secrecy on that head ; and that all he could say was, that I might rest assured there were coals on the estate.

As to his not chusing to have me accompany him in his researches, in giving me a reason for his unwillingness, he paid me an unprofitable compliment, assuring me, that had I been as little intelligent and curious as most gentlemen are, he should have had no objections to my being with him ; but that he soon perceived, if I was present, he could not make himself a judge in the matter, without imparting to me a greater share of knowledge than he could by any means consent to do.

Here the affair now rests. I dismissed him with a present, besides what I had agreed to give him, and he was seemingly perfectly satisfied.

I have several times since almost determined to search for this hidden treasure, but have been hitherto deterred by the great hazard of loss. Many others have told me there were coals on the estate, but on the opinion of these I have no dependence.

Unresolved, and wavering between two very opposite opinions, I took it into my head to write you this letter ; the chief purpose of which is, to request some of your intended correspondents to give me their candid opinions in what manner I ought to act. The gentlemen in the North, and in Wales, where coals abound, will doubtless favour you with their frequent communications ; it would be conferring a great favour on me, and many others in my situation, if some one judicious and intelligent particular among them would inform the world, through the channel of your collection, what are the most certain prognosticks of coals being on an estate. I imagine some judgment may be formed from the nature of the fossils and stones found near the surface ; from the growth of the corn, grass, and even the trees

trees on the land; from the nature and situation of the springs, and also from the nature and disposition of the understrata of earth.

It is very easy to form conjectures; but it is far from being so to make rational conclusions: this is my case; fond of the scheme, I every day almost conclude, from observations of my own, that it must be; and it often requires my whole stock of prudence, to prevent my embarking precipitately on so hazardous and expensive an undertaking*.

You must certainly know, Gentlemen, how uneasy it is to be in suspense in any important concern: let me intreat you, therefore, to give this letter a place in your intended publication before Christmas; I may then hope, in the space of a few months, to have my doubts resolved; for the gentlemen who will read my letter in your collection, will not, like the man I employed, be prompted, by the motives of self-interest, to conceal their knowledge; they will, I hope, on the contrary, be free to impart it, especially when they reflect, that the more this kind of knowledge is propagated, the more will it be for the benefit of the community in general.

A land-owner is often possessed of a treasure on his estate, which he knows nothing of: specimens of it are every day thrown to the surface by the ignorant farmer's plowshare, without being noticed: this was the case some years ago in a farm belonging to a friend of mine; it was a poor hungry soil, and had been for a century before let under 50*l.* a year: by mere accident a fine marl was discovered near the surface; the whole farm has been mended with it; and the same land now lets for 270*l.* a year, being divided into two separate farms. I am,

GENTLEMEN,

July 25, 1763.

Your humble servant,

A LONDONER.

* We should be glad if this gentleman was, by means of any of our correspondents, informed in the matter he seems so anxious to know; but we have reason to fear that unerring and universal rules cannot in this case be laid down. R.

NUMBER XXXVI.

A Letter to the Editors, containing a short Account of the Manufactory for making Cambrics, lately established at Winchelsea in Suffex.

GENTLEMEN,

YOU may not, perhaps, be displeased, that the public should, through the channel of your collection, be made acquainted with an infant manufactory, lately established at Winchelsea; I mean that for making the very fine linens called cambrics *, equal to those which used formerly to be imported from France.

The public-spirited gentlemen who first ventured on this arduous, as well as hazardous undertaking, have reason to flatter themselves, that their scheme will succeed, and turn out, not only to the great benefit of their country, but likewise to their own particular emolument.

The workmen that are now employed are chiefly French; but English children are daily bound apprentices to them, that the secrets and mysteries of the several branches may soon become our own.

From the specimens already exhibited, there is great reason to conclude, that this manufactory will succeed: the establishing it has already had a wonderful effect on this town and neighbourhood: every thing seems alive; and Old Winchelsea † is, as it were, arisen like the phoenix out of its ashes.

It was a very difficult matter to procure workmen skillful enough to manufacture this fine cloth; and it was still more difficult to get flax proper for making yarn fine enough:
yet

* The cambrics received their name from Cambray, a city in the French Netherlands, where great quantities of them are annually manufactured. N.

† Old Winchelsea, which was two or three miles from the site of the present town, had eighteen parishes, and was of great consequence. It was swallowed up by the sea before the time of Edward the First, in whose reign the present town was built. A.

yet both these difficulties are surmounted; the first by procuring proper hands from France, and from among the French prisoners, who were maintained here for so many years during the late war; and the latter by improving the culture of the flax they sowed in the neighbourhood, in the following particulars.

It was necessary for them, that the fibres of the flax should be fine, slender, and long, and that in a much greater degree than in the linen made in Ireland for shirting, sheeting, &c. for this reason they proceed, in the culture of their flax, in a manner very different from the practice of the Irish farmers.

The land on which the plant is to be sown must be very fresh*, but not rank, for that would defeat their intentions of having the fibres fine. If it will do without dunging, so much the better. For the crop to succeed well, the soil † of this land should be reduced, by frequent tillage, as fine as garden-mould; the stones should be all picked; and the land, whilst it lies fallow, that is, before the seed is sown, should be kept as clear as possible from every kind of weed.

After every preparation is made, the best seed that can be procured is sown very thick on the land; and if the weeds have been previously well destroyed, they will not afterwards hurt the crop. The plants standing very thick run up slender without branching: but, in order still to promote their growth, the planters stick the crop very full of long sticks ‡; and on these they lay bushes, which, shading the plants from the intense heat of the sun-beams, make them run up very slender; and they yet enjoy air and warmth enough to prevent their stems, or stalks, from rotting by too much moisture §.

This

* The soil on which they grow their finest flax about Cambray, though good and fruitful, is dry; and this, perhaps, prevents the crop from being too rank. O.

† We should be glad to be informed in what soil this very fine flax succeeds best. N.

‡ This method is also frequently practised in Ireland by some of the curious flax-growers who would have very fine yarn; and it is said to answer that intention, by causing the fibres to grow long and slender. R.

§ For an explanation of this matter by a gentleman of Ireland, see page 406 of this vol. A.

This method may possibly by some of your readers be thought very troublesome and expensive, and not to be practised in large concerns; and this is certainly the truth: but we are then to consider, that in these fine manufactures, a small quantity of flax will go a great way; and that the planter's aim is to procure not a large crop, but a valuable one.

If the flax is of a proper growth for making very fine yarn, fit to be used in the Winchelsea manufactory, it fetches a great price; if, on the contrary, by the planters sparing either pains or expence, it should be too coarse or short, it will not there be saleable.

For the reason above recited, it is the planter's interest to be as nice as possible in the culture of this plant, and to procure every intelligence he can, that may enable him to improve the quality, not the quantity of his crop; for on that only, in a great measure, depends his future profit.

The manufacturing the yarn, by weaving it into linen, is very delicate work; and this is chiefly done in the fine stone vaults, with which this town abounds*; for the skilful workmen say, that the thread is so fine and delicate, that it will not, before weaving, bear the influence of the upper and freely-circulating air; for, after being but a very little time exposed to it, the yarn becomes unfit for the loom†, as it would be brittle, and in working break into short lengths, as if it was rotten.

Before French cambrics were prohibited by act of parliament, the quantity of them consumed in England was almost incredible: it is therefore to be hoped, that our ladies will not be less fond of this Winchelsea linen, (which equals the French cambrics in quality) merely because it happens

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* The streets of this town were all paved, and at right angles, so that they were divided into thirty-two squares or quarters. The stone-works of its three gates are standing, though three miles asunder over the fields; and in many places of the town are fine stone arched vaults for merchants goods, in which the weavers now work; and many ruinous materials of ancient buildings, so buried, that the streets have been turned into corn-fields, and the plow goes over the first floors of houses. N.

† The common thread used by the sempstresses soon becomes rotten, and breaks in the working, unless it is carefully kept from the air. O.

to be manufactured in England. Foreign fripperies have been too long admitted: it is time that a patriotic spirit of emulation should take place among us, and that we should vie with each other in our endeavours to promote the commerce of our native land.

On the quantity of commodities manufactured in this kingdom depends, in a great measure, the preservation of the balance of trade, which has been of late years so much in our favour: must we not therefore be infatuated, to prefer making any part of our apparel of foreign materials; particularly when every article, necessary for the dress of the rich or poor of either sex, is as handsome, as good in its kind, if not better; as sumptuous, rich, and elegant; and what would render it still more acceptable to many, may be made as expensive as any France, &c. can produce? Would the court set the example, nothing but the produce of English manufactories would be worn in the kingdom.

Much is due to the successful endeavours of the Society to which you belong: the acting members have all along discovered a spirit of patriotism that is truly laudable, and will doubtless be of the greatest benefit, as well to the present race of our countrymen as to our posterity.

You have not, among your readers and correspondents, one who wishes more that your collection may meet with the success it merits, than,

GENTLEMEN,

October 6, 1763.

Your humble servant,

A Man of SUSSEX.

NUMBER XXXVII.

Copy of a Letter from Mr. C——, to Captain H—— J——, proposing the finding some new Materials for making Paper, sent to Dr. Templeman, to be communicated to the Society.

SIR,

I Have, for some days past, been endeavouring to execute the commission you gave me; but, believe me, Sir, there are no linen rags to be had for the price you fixed. It

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is, indeed, but of late years, that they have been so dear, owing, I suppose, to the great increase of their consumption in the manufacture of paper. In reflecting on the vast quantities of paper annually exported from Holland, I am often at a loss to think where they contrive to procure the rags with which it is all made, but they are an industrious people, and happy at resources.—Paper * is made from linen rags, and linen is manufactured from the fibres of flax. Our paper then cannot be made till our linen is worn out, whilst it continues to be composed of these materials. But might we not go a shorter way to work, and find out some vegetable, from which it would be worth while immediately to make paper, without its being previously spun into yarn, or wove into cloth? There are certainly many plants which would afford us materials for this purpose.—The reason that flax is preferred for making cloth is, because its fibres are long and fine; but other plants which have not such long and fine fibres, would do for paper after being properly prepared and bleached. I can almost venture to assert, that the *Urtica urens maxima vulgaris*, the common large stinging-nettle, would answer the above purpose; and this is not difficult to procure: also the *Lupulus mas et femina*, the wild hop which grows in the hedges, and the common Kentish hops, would answer this purpose; these also are easy enough to be procured. Many other plants, which I do not just now recollect, might be added to the list.—Should this scheme be ever pursued, we should soon be able to make all the paper at home that is consumed in the kingdom, without importing any either from the Dutch or French.—You are not, I dare say, of the opinion of some, who would think this matter of little importance, as I need not tell you how very large a quantity of paper is annually consumed in these islands: your own dealings will convince you of it at all times.—I have not at present leisure to enlarge on this subject; I may, perhaps, take another opportunity of telling you more of my thoughts, especially as I know you to be so much a friend to the encreasing commerce of your native country.

Let

* This letter was read before a committee of the Society, on September 12, 1763, and many of the gentlemen attending thought it a good foundation for a premium.

Let me know as soon as possible, when it is you can procure me the fir seeds from Virginia, for I still continue my resolution of raising a plantation of them at _____. My oaks grow well, and thrive apace, owing, I believe, entirely to my manner of planting them; and I now find, by experience, that I can raise *Ananas*, or pine-apples, much cheaper and better than they are to be had in the London markets.—Let me see you soon at this villa, where I now pass all the hours I can spare from business: you will find me literally *sitting under my own vine*, and feeding on the almost spontaneous fruits of the earth. Adieu.

S——n,
June 10, 1763.

Believe me very much yours,
J—— C——.

NUMBER XXXVIII.

*Extract of a Letter * from the Reverend Mr. * * * to * * *
* * * *, Member of the Society for encouraging Arts,
Manufactures, and Commerce; and by him sent to Dr.
Templeman: Containing Hints towards attaining a Me-
thod of staining Elm of a fine Mahogany Colour.*

... **Y**OU know very well, my dear Sir, in what manner I spend much of my time. I agree with you, that philosophical enquiries are very amusing; but should not we sometimes endeavour to benefit the world by our researches, as well as entertain ourselves? I have been for some months thinking of a novelty, at least, in the arts; whether, if compassed, you would allow it to be an improvement, I cannot say.—The world of England has been, for some years past, running mad after mahogany furniture: an inferior artisan thinks it a great misfortune, if he cannot have his two or three mahogany tables.—By this prevalence of taste, or whatever else you please to call it, the wood is absolutely, as I am very well informed, grown scarce in our West-India Islands, so that a great deal of French mahogany

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* This letter was read before a committee, on Sept. 12, 1763.

is yearly imported *, notwithstanding which, the price, the dealers say, is of late very much risen. What I would propose is, that the hard close-grained English elm should be substituted in its place. I know it will take a good stain; but I have not yet found out a method of giving it a true mahogany colour.—The wood, before it is stained, should be prepared: perhaps the following manner may be as good as any; I have tried it, and find the wood receives and retains the colour much better than when unprepared.—When the wood has been cut into thin boards, I get it rough-planed with a common jack-plane; after which, I heat a large copper full of pond-water: when it boils, I put in my boards, taking care that they be entirely covered with water all the time they are kept boiling, which is to be, at least, an hour; but the time is to be governed by the quantity of sap they have in them. I then take them out of the water, and wiping them as dry as possible, with either a coarse cloth, or any thing else that won't stain, I lay one of the boards on three or more pieces of thick deal laths: on this I place more pieces of laths, then another board, and so on till the number of boards amount to ten or a dozen: over all I put two or three heavy weights. They are then left to dry, which, being placed in this manner with a thorough draught of air, they do without warping: were it not for this precaution, they would after boiling, as I have often experienced, be very apt both to warp and split. I must not omit observing, that whilst they are drying they must be laid in the shade.—This method of preparing boards divests them almost entirely of their sap, makes the wood much lighter, and more susceptible of the impression of colour, than it would be in its natural state; and the stain you give it is more uniform.—When first I thought of this affair, I naturally imagined that a vegetable colour would be most proper to impregnate a vegetable substance withall; but I was herein, in some measure, mistaken;
for

* A great deal of mahogany, of a very inferior quality, has been lately imported from the Havannah: it is much softer and paler than the Jamaica wood, and will sooner decay. N.

for some other matter was required to make it at all stable; and after all, much of it would wash off with a wet cloth, and almost the whole of it would disappear when the board was boiled a little while in pond water*.

After this, I had recourse to colours extracted from minerals, and must own, I here met with much better success, yet still did not gain my point. In this situation the matter now rests, though I don't mean to give it up.—My reason for troubling you with this narrative is, that you may, if you think proper, communicate it to the illustrious Society of which you are a member. If they deem it worth their attention, they may perhaps advertise a premium for the discovery; and in that case these hints may be of use.

I have purposely avoided mentioning the several things I tried to stain the boards withall, because the same articles, which failed with me, may possibly, by a different process, succeed with somebody else, and it would be a pity to prescribe so many probable materials from having a varied trial in other hands. Yet, after all, my own opinion is, that the colour will best be procured from some mineral extract; at least, so my repeated experiments seem to declare.—Perhaps, if we can once gain our point in this first instance, we may hereafter attain a method of colouring ivory better than it has been hitherto done; and we may probably go still a step further, and be able to stain white marble with lasting colours, regularly disposed: could we once do this, we should have no occasion to lament that canvas is of so perishable a nature; for such painters as were willing (which most are) to have their works reach remote posterity, would doubtless prefer marble. Some, indeed, have used copper; but they do not find it answer, the colours being remarkably apt to peel off.

* We could wish our ingenious correspondent would try to stain some other wood, of a closer grain than elm; suppose oak, as we are apt to think it would not only be more durable, but take a better polish, in which the beauty of mahogany in a great measure consists. E.

NUMBER XXXIX.

A Letter to the Editors, on some Wine made in England, of the Nature of the Rhenish.

GENTLEMEN,

READING, in the *Museum Rusticum*, the Letter marked No. XVII. p. 24. I find that his grace the duke of Norfolk makes annually a considerable quantity of good Burgundy wine, at Arundel Castle in Suffex, from a vineyard he has planted there. I have, indeed, often heard of this curious vineyard, and am much surpris'd no gentlemen in other counties of England have followed so laudable an example.

Good wine may, doubtless, be made in England; for as your correspondent very justly observes, we had formerly many vineyards, and, consequently, much wine made in this island *. If I mistake not, some monasteries were remarkable for making good wine.

Countries much colder than that we live in, produce good wines. Are we not particularly fond of that excellent beverage, which the banks of the Moselle and Rhine produce? and even in the North of Switzerland do they not make wines, which serve well for home consumption, and might even with advantage be exported, had the cantons much foreign trade?

Some few experiments in the affair of planting vineyards have been made in England, but with little success, and all entirely owing to a want of skill in the planters. That England might produce good wine, is certain; his grace of Norfolk's undertaking convinces us of it: but it may, perhaps, be urged, that what his grace does is by mere dint of money; yet this I deny, for money cannot force nature, and a poor man, with equal knowledge, might raise vines as well, though not in so great numbers.

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* See what has been said in Number XII. page 64, and Number XVII. page 84, on the culture of the vine, &c. N.

As you have already given your readers one instance of the possibility of making wine of a good quality in England, I shall now furnish you with another, perhaps equally curious, and more useful.

I had some weeks ago occasion to call at the very ingenious and sensible Mr. Rocque's, of Walham Green. After some little time spent in conversation, he insisted on my drinking a glass of wine, and immediately produced a bottle of very good wine, which I took for Rhenish. I drank several glasses of it with great relish; but as Rhenish wine has a certain natural degree of acidity in it, which is apt to give me the cholic, I declined taking any more, till Mr. Rocque assured me that I need not fear its having that effect, as he had made it himself, and could warrant its being the pure genuine juice of the grape without mixture. Encouraged by this I drank freely, without finding the least inconvenience result from it, not even the slightest head-ach the next morning, which is always the consequence of my drinking Rhenish wine over night.

This induces me to think that his wine, which is only two years old, and will certainly improve with age, is more wholesome than the Rhenish of the taverns: I am certain it is more palatable, for I drank it without sugar.

I am apt to think that the vine, producing the grape from which Mr. Rocque's wine is made, is better adapted to the temperature of the air in our climate, than the vine which bears the grape from which the rich Burgundy wines are expressed, and that a certain degree of agreeable acidity in the liquor is, doubtless, more wholesome to English constitutions, which are frequently subject to scorbutic disorders.

I sincerely wish Mr. Rocque would spare time from his numberless avocations, to give the public, through the channel of your collection, a detail of his method of managing his vines *, as well as the manner in which his
wine

* We should be greatly obliged to Mr. Rocque if he would favour us with this account, as it could not fail being extensively useful, and would greatly elucidate this subject. N.

wine is made, and how it is ordered till it is fit to draw off into bottles.

Mr. Rocque is known to be very intelligent in every thing that respects either *horticulture* in particular, or *agriculture* in general: directions therefore for planting and managing a vineyard, coming from him, would have due weight with many, and I among others would be very glad to plant a vineyard that would give me an opportunity of drinking as good wine of my own making, as that I more than tasted at Mr. Rocque's.

Was I well enough acquainted with Mr. Rocque, to ask him certain questions on this head, you might not, perhaps, have been troubled with this letter; but as I am desirous of information, and cannot, consistently, get it in any other manner, I am content, and even pleased, the public should share with me the satisfaction I shall enjoy, if Mr. Rocque complies with this my request.

The world is much governed by self-interest: this, I acknowledge, was my primary motive for writing to you, or I might, perhaps, more properly term it self-satisfaction, or self-gratification; but be that as it will, if every degree of self-interest was as much connected with the public good, it would be happy for the nation.

It cannot be doubted, but that if good wines could be made in England, much money might annually be saved, particularly what goes to France for the purchase of that dear commodity, for the greatest part of which we pay hard money, or, what is still worse, unmanufactured wool, when the wines are bought by our smugglers.

High duties encourage smuggling, and, in fact, the government would be very little losers by an absolute prohibition to the importation of French wines; for I have great reason to think that, of the clarets, &c. drank in England, at least two pipes out of three are smuggled, and pay no duty.

Much of this trade is, I am informed, carried on in the Isle of Man, and from Guernsey, Jersey, and Alderney, which lie convenient for the port of Southampton: I have even been told by some, who ought to be acquainted with

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the matter, that it is no unusual thing for two or three particulars to import clarets in port casks, and enter them at the custom-house as Portugal wines, paying duty accordingly. This is, if true, certainly a great fraud on the government; but, if people will cheat the nation, and swear for that purpose through thick and thin, what can be done with them? The only remedy would be, to punish them very severely when detected; yet the misfortune is, that when this happens, a few presents, properly applied to the palms of certain particulars, hush all up; and the same iniquitous practices are still followed, till they are again detected, and again hushed up for a *reasonable* gratuity.

Should we ever be able to raise vines in England that would bear grapes, yielding a rich light juice, fit for people of quality to drink, all these iniquitous proceedings would be at an end, and many men would escape daily perjury: it is scarcely necessary to mention how many perjure themselves in a year at the custom-house; to be able and willing to swallow a custom-house oath, is almost become a necessary qualification for a clerk in certain branches: the effect this has on the morals of youth cannot but be evident.

I shall not enlarge any more on this very disagreeable subject, but conclude with observing, that your collection of papers, such of them at least as have hitherto appeared, cannot but be approved of: for my particular part, I own they have given me great satisfaction; the subjects chosen by your correspondents are mostly important, and all in general useful. Wishing you great success in your undertaking, I am,

GENTLEMEN,

London, Nov. 9, 1763. Your most obedient servant,
R—— M——.

N U M B E R XL.

A Letter to the Editors, from a Member of the Society of Arts, relative to the Culture of Canary Seed.

GENTLEMEN,

I Have long wished to be acquainted with the method in which the canary seed is cultivated: you may therefore well imagine I read, with secret pleasure, a piece published

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in your collection, and marked Number V. page 22. yet I own to you, though it gave me great pleasure in the reading, my curiosity was far from being satisfied.

I could sincerely wish your correspondent had been more particular in his relation : I do not recollect that he has at all told us what soil it thrives best in ; neither has he told us any other method of culture, but that which is practised by the inhabitants of Thanet, when they break up a lay for the purpose of sowing it on fresh land.

I should have been also glad to have known what manure agrees best with it, and how deep a coat of earth it requires ; whether it is apt to lodge in a wet season ; and which is the best method of threshing and dressing it. I could, indeed, mention many more particulars, which I should be glad to be informed in, respecting the culture of this plant, and which I am the more desirous of knowing, as I can get no intelligence on that head from Mr. Miller's Gardener's Dictionary. I have the edition of the year 1759, of that work, now lying before me, in which I cannot find this plant mentioned above once. In treating of grasses, under the head *Gramen*, Miller just mentions the order in which Ray has ranged them ; and among the rest I find the name only (*Gramen phalaroides*, the canary grass) of this plant.

How Mr. Miller came to be guilty of so great an omission, I cannot say : perhaps he was not well informed of its culture, and had had no experience of it himself. It is certainly a matter of some consequence, as great quantities of it are annually used in London ; and, as far as I can find by what your correspondent RUSTICUS says, Mr. Miller might have had good information in every thing that related to this plant from some friend in Thanet ; and he has doubtless correspondents all over the kingdom ; for he could not certainly have wrote so much on the subject of husbandry, without almost a universal intelligence.

I despair not, in a future edition of the Gardener's Dictionary*, of seeing the culture of this plant treated of at large ;
but

* We have consulted Mr. Miller's Gardner's Dictionary on this head, since the receipt of our correspondent's letter, as much as our leisure would permit, but do not find he has mentioned the

but hope, in the mean time, that some of your worthy correspondents will give the public what intelligence they can in the matter. If Mr. Rusticus is yet at Margate, he has a very good opportunity of gratifying me and many others: if he has left it, I hope some of the worthy gentlemen farmers in that neighbourhood will take the affair in hand.

I am, GENTLEMEN,

Nov. 1, 1763.

Your humble servant,

OBSERVATOR.

NUMBER XLI.

A Letter to the Editors, ou the sowing Horse-Beans in the dry, gravelly, or chalky Loams in the Chiltern Country of Bedfordshire.

GENTLEMEN,

HAVING an hour or two on my hands, as I hate idleness, I cannot, perhaps, better employ my time, than by writing you, for the use of the public, a letter on the important subject of agriculture.

I purpose at present treating only on one matter; that is, the methods followed in the chiltern parts of this county in sowing horse-beans, or tick-beans, as we sometimes call them.

It is very well known, that this plant loves a stiff clayey soil, rather inclining to be moist*; whereas the soils of the lands I talk of, are either a dry, gravelly, or chalky loam. This obliges us to vary much from the practices of the Essex and Middlesex farmers, who occupy heavy land: were we to pursue their methods, our crops of beans, in a dry summer, would be entirely parched up and lost.

In stiff soils, that are retentive of moisture, a little rain may do; but if we do not provide against a want of rain, our lands are over-run with weeds, and our crops ruined.

In order to secure ourselves tolerable crops, we sow our beans very thick, either in a broad cast, and plow them in, or under furrow: we allow always five bushels † to an acre.

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the canary plant more than once, and that without giving any account of its culture: it may, however, have been arranged under some other title, which we may have overlooked. O.

* Mr Miller observes, that it also loves an open exposure.

† The usual quantity in heavy land is about three bushels. N.

By sowing the land so thick the plants come up very close; and though the earth was at seed-time loose and dry, yet the stalks grow up so near each other as to shade the land, preserve the moisture in it, and keep down the weeds *. There is seldom occasion to hoe this crop, the weeds being mostly starved by the bean-plants: and, indeed, the expence is in general grudged, though it is certain, it would greatly encrease the produce of the land.

The great difference betwixt this method of husbandry, and that practised by the farmers who sow horse-beans on stiff heavy lands, consists in the quantity of seed we allow, that our plants may stand the closer; for many farmers in my neighbourhood think, that diverse advantages are derived from this method. In the first place, as I mentioned already, it shades the land in a dry summer, and prevents the roots of the beans being parched: in the next place it chokes and kills the weeds; and, finally, they think it mellows the land, and prepares it excellently well for a crop of wheat.

Experience convinces them they are, in many respects, right; for they have often very large crops: I have myself met with great success in this method of husbandry, but do not now practise, for reasons I shall mention.

The soil of my farm is, for the most part, a light gravelly loam; and it was on this account, I followed the example of my neighbours in my bean husbandry: but, going a few years ago into Essex about some particular business, I observed, and have since practised, a much better method, which, however, I have since discovered, was far from being unknown in this county, or in Hertfordshire. The method I mean, is planting beans with a dibble by hand, seed by seed.

This is now my method of practice; and I find it answer very well, and that it is not so expensive as one would at first imagine.

This

* This method greatly differs from the principles of the new husbandry, in which every plant is allowed a certain space to spread its roots, and due culture is given it during its growth: were the farmers in the chiltern countries to adopt this method, it would, perhaps, be advantageous to them; for the frequent culture, either with the horse or hand hoe, would settle the light earth to the roots, bring the plants forward, prepare the land well for a future crop, and dispose the earth to receive all possible benefit from the dews, &c. in a dry season. O.

This work may be done either by women or boys ; and when they are a little used to it, they do their work with great expedition. I plant my beans in rows a foot asunder, at three inches distance in the rows, allowing them no more distance on account of the nature of the soil of my land.

My chief reason for preferring this method is, that I thereby save three bushels of seed in sowing every acre ; for I before used five bushels, whereas, in this method, on my light land, two * are quite sufficient : and this is, indeed, an object well worth attention, as horse-beans are sometimes, particularly at seed-time, at a very high price.

In the next place, by this regular method of planting them with a dibble, I have an opportunity of hoeing betwixt the rows ; this keeps down the weeds ; and what is of much greater consequence, it loosens the earth about the roots of the plants, disposes it to be benefited by the dews and light rains, and gives a large portion of additional nourishment to the crop. These then are my reasons for preferring this last method.

But to proceed : when my field of beans is planted, I give the land a hearty stirring with a loaded long-tined heavy harrow : this breaks the clods whenever there are any on the land, pulls up the few weeds that have appeared, and settles the earth close to the seeds, so that they vegetate the sooner.

When this is done, I pass the roller, not a very heavy one, over it, to lay it smooth and level ; and I then harrow it once more with a very light harrow to loosen the surface a little.

When the plants are about two inches out of the ground, the land is well hoed with a hand-hoe ; and just before harvest, when the fruit is set, the field gets another good hoeing : if the season is wet and following, I bestow on my crop an intermediate, but slighter hoeing, just before the beans blossom, to keep down the weeds, which would otherwise sometimes get a-head.

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* On a stiff soil, in this method, one bushel of seed is quite sufficient ; and next to sowing with a drill plough, and using the horse-hoe, this practice is to be recommended. R.

Some of my neighbours think my practice a very troublesome husbandry; but I find it answer very well, and in consequence recommend it all I can, to such as will listen to reason founded on repeated experience.

I find another great advantage from this method of cultivating horse-beans, which I have not yet mentioned; and that is, that the land is so well prepared by it for a succeeding crop of wheat, that I have often sown it on a single plowing with great success; and the land has been in better tilth, than I have often had it after a whole year's fallow.

I cannot, indeed, enough commend the practice which many very intelligent farmers have of late fallen into, of frequently sowing crops that require hoeing, as this, in fact, answers the purpose of resting the land; for the nourishment these plants require in their growth, in nothing hurts the land, when compared to the benefit it receives from the frequent stirrings it has during the same period *.

With regard to the hoeing of my beans, I never suffer my work to be slighted over: I employ strong labourers, furnish them with good tools, and my hoeing does the land at least as much good as a middling plowing; for the men cut deep, and stir the land to purpose. This I find the cheapest way of going to work; for I have frequently made the experiment, and ordered them on purpose to skim over a part of a field in the ordinary way, that I might see the difference: and great difference indeed there always was, much more than a person, who was not a judge of the matter, or who had not seen it, would imagine.

I find it necessary, after my beans are cut, to set up the bundles for some time to dry: but this I never do in the field where they grew, as it would sometimes be a means of preventing me from getting the land early enough in proper order for sowing wheat; therefore as soon as my bean crop is cut and tied up, I carry them on to some upland dry pastures, where they are set up to dry, and I immediately plow
up

* Our correspondent seems to have adopted, in a great measure, the principles of the new husbandry; we could wish he would try what success he would have in using the drill-plough and horse-hoe: he seems intelligent, and could not therefore be at a loss in making a proper use of them; very little instruction would set their advantages in a very clear light to him. E.

up the field where the beans grew, and give it at least another plowing before I put my wheat into the ground *.

I have not a great deal of time to spare, or you should frequently hear from me; but having appointed a gentleman to meet me about some business, at the inn where I now write, at five o'clock this afternoon, and coming here at three, the reading of your proposal, which I happened to have in my pocket, put it into my head to write this letter; if it should be acceptable, it will give me pleasure; if not, it has at least answered the purpose of filling up a vacant hour of my time. I am,

GENTLEMEN,

Your most humble servant,

Wooburne, July 31, 1763.

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N U M B E R XLII.

A Letter to the Editors, from a Gentleman in Hertfordshire, relative to the Culture of the Hog Pea.

GENTLEMEN,

WE are very fond, in the county I live in, of sowing grey peas, not only by way of changing our crops, but because we imagine the culture they require is of great service to the land, by keeping down the weeds, and bringing the soil to a fine tilth for future crops.

In our light lands we most of us prefer sowing peas to beans, as the latter naturally require a stiffer soil, and do not give us such large returns; neither is the haulm so good, as it will not serve for stover for our cattle in the winter, when we are most in want of it; but the pea-straw is excellent for this purpose, being very nourishing and sweet; and the cattle are very fond of it, as it agrees very well with them when given with discretion: it is much best when mixed with straw.

All our cattle eat it almost with greediness, horses, cows, and sheep; but horses that are often put into quick motion should not be fed with it: it agrees best with draught-horses. The grey pea, which we in general sow in our fields, makes
excellent

* See a remark on this passage, in a piece written by Mr. Comber, and marked Number CI, page 440.

excellent food for our hogs, which fatten on them sooner and better than on any other food.

We also give them instead of oats to our horses: but in this matter we are very cautious, as it is necessary they should be thoroughly dry before the horses taste them; and, indeed, it is by much the safest way to have them first dried in a malt-kiln, when they become excellent provender, and will maintain the horses under the hardest labour: another very particular reason for our farmers giving their horses so many peas is, that they go much farther, and are cheaper food than oats in general are: on this account most of our oats are sent to market.

On our chalky, sandy, or light loams, we sow our grey peas in the broad cast, and plow them in, or else we sprain them in under furrow. This method secures them a sufficient covering, which they would not otherwise have if they were only harrowed in; but the crop would be subject to be ruined by the least dry weather, which often happens after pea-seed time*.

In these light lands we love to sow early, that the young plant may have all possible benefit from the spring rains, which bring them forward, and make them pod better, by being at the bearing time better rooted.

We sow our peas in this manner on light lands with a single plowing †, allowing often five bushels of seed for an acre, when it is sown in the broad-cast way; but three bushels, or at most three and a half, are enough, if the seed is sprained in by a man's hand after the plow: and this, indeed, is the best way of doing it, as it not only saves seed, which is often a matter worth attention, but the crop comes up in regular rows, and is easier weeded or hoed.

We generally sow this seed in February, for the reasons above mentioned, contriving to have done before March: the heavy stiff lands we always sow last.

Peas

* The better tilth land is in when peas are sown, the better will be the crop; they thrive better, for this reason, on land that has borne first a crop of wheat, then another of barley: all the plowings both sorts of corn had, are of benefit to the peas. R.

† For peas to be sown after a single plowing, the land ought before to be in good tilth, and well broke, or the crop will be indifferent. R.

Peas are, in general, very tender; but some of the hardy kinds will be, to all appearance, dead two or three times in a spring, and yet recover and bear a good crop.

Some sow their grey peas in January; but this is not so safe a method, as we have often hard frosts in that month, whereas, after the first week in February, the frosts are seldom of long duration.

About a week after my peas are sown, I give my land a rolling, my light land I mean, to settle the earth about the sprouting pea; and, for this purpose, I generally make use of a tollerable heavy roller, for a light one does little service. Light soils are porous and hollow; therefore they require pressing, to lay their parts closer together, and keep out the chilling frost, winds, and cold rains, which would otherwise, and frequently do, destroy the infant plant before it appears above ground *.

Some farmers are great slovens in their pea-fields, but I always allow my peas one or two hoeings, according as the summer is wet or dry, and sometimes a weeding besides; and this method I find is of infinite advantage to practise, as the succeeding crop, be it what it may, is always remarkably clear of weeds †, none of those pernicious vegetables having been suffered to perfect their seeds, whilst the pea-crop was on the ground.

By these methods of practice I get very good crops of peas from my light chalky loams; but I do not, in every respect, manage in the same manner on some stiff clayey land I have ‡.

On this soil I sow my peas somewhat later, perhaps a fortnight; and I allow the land two plowings before I sow my peas, that it may be loosened, and made as hollow as possible, being by nature too compact and close. I here sow peas in the broad-cast way, and harrow them in; but I

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* This practice of passing the roller over light, porous, and hollow land, is to be commended. E.

† If peas are sown thick, they naturally keep down the weeds; but if sown in rows with any kind of intervals, hoeing is necessary. E.

‡ Sowing peas on stiff lands should, if possible, be avoided: beans are much best for such soils. N.

do not roll them, as it would be apt to knead the land, and form a crust on its surface, which would prevent the tender shoot of the pea from being able to make its way to the air.

I also allow less seed, at most three bushels, often not much above two, for an acre; and this heavy land does not require so much weeding or hoeing, as the weeds are not here of such ready and quick growth.

I have, as well as many farmers who live near me, yet another method of sowing these peas, and that is on land that is of a middle nature betwixt light and heavy. My usual practice then is to sow half my quantity of seed broadcast, and plow it in; after which I sow the other half on the same land, and harrow it in with a long-tined harrow, in the same manner I do on my stiff lands.

Again, on some stiff spewy land I have, I sow my peas in ridges, to keep them from too much moisture: but when I sow them this way, I am under a necessity of hooking instead of mowing my crop, which is an inconvenient and slow method; therefore, for the most part, I think, to be avoided.

These then in general are the methods we pursue in this county in the culture of the grey pea; a corn which we are very fond of, and not without reason, as an intermediate crop.

We often, indeed, suffer by this our fondness; for if a dry summer comes on, the crops of peas in a whole district are sometimes destroyed in a trice by slugs, which are very greedy of this food, on account of the particular sweetness of its sap.

We have no certain method of guarding against this dreadful evil, any more than against the ravages of game and field fowls, such as pigeons, &c. which destroy great quantities of the seed immediately after sowing: all we can do, is to allow such a quantity of seed, as that, after all these losses, there will still be enough left to supply a full crop; and this, indeed, is the principal reason of allowing, for our light chalky lands, so large a quantity of seed as five bushels, which would be at least as much again as would
be

be necessary, was it not for the ravages above mentioned.

This may not, perhaps, be the last letter you may receive from,

GENTLEMEN,

Your most humble servant,

Hempstead, Sept. 15, 1763. A GENTLEMAN FARMER.

N U M B E R X L I I I .

A Letter to the Editors, containing a useful Caution with respect to the feeding of Ewes with Turneps or Cole.

GENTLEMEN,

THE two parts I have already seen of your collection, give me reason to think, that your papers on husbandry will be of great use: you honestly own you depend on the public for supplying you with materials: every one therefore should contribute his mite; and it is this consideration induces me to become your correspondent.

I have often improved my knowledge by other people's mischances, and am therefore willing your readers should be improved and forewarned by a misfortune which some years ago happened to me.

In some parts of our county of Essex we run greatly on the turnep and cole-seed husbandry, reckoning a crop of either almost, if not quite, as good as a fallow for our land.

In the beginning of the winter, or latter end of autumn, we generally buy in our stock of ewes, for our lands are in general so good, it is not worth our while to breed. These ewes we turn on our stubbles and fallows, and in the winter and spring often give them turneps or cole.

It is now about six years ago since I turned a parcel of ewes into a turnep field, and another parcel into a field that was under rank cole-seed plants.

They fed greedily in both fields, and on examining them frequently I found they throve and grew fat apace: this gave me great satisfaction, as I imagined the ewes would be fit for sale soon after the lambs were drawn off.

But when the yeaning time came on, I had a dismal prospect; the turneps and cole were such nourishing food, that the lambs had grown too big in the bellies of the ewes, so that many of them could not lamb without help: some lambs were even obliged to be cut away by pieces, by which means I lost above forty lambs, and very near a score of fine fat ewes, that would have been worth to me twelve or fourteen shillings a-piece.

I found, on enquiry, that several farmers had felt, at different times, the like misfortune, but knew not to what cause to assign it; and I should not myself so soon have discovered it, but that I caused several of the ewes that had died in yeaning, to be carefully opened; and, on inspection, the cause of my loss was apparent enough.

I have since acted with great caution, and never give my ewes much fattening food till after they have yeaned; there is then no danger: on the contrary, either turneps or cole-seed plants contribute to encrease their quantity of milk, fatten their lambs, and make the ewes themselves sooner fit for sale to the butcher.

I have sometimes, indeed, been obliged, through a scarcity of other feed, to turn my ewes, before yeaning time, into turneps; but then I am always careful to take them out about five or six weeks before the time they are to drop their lambs: by this means I escape the loss I once suffered.

Many farmers have lost ewes and lambs in this manner; but as every one does not know the cause of their misfortune, your publishing this short letter on the subject cannot but be acceptable to your readers.

Making such matters as these known, is like placing a buoy on a dangerous rock or shoal, which is a warning for the careful mariner not to steer his bark that way*.

I am, GENTLEMEN,

Your most obedient servant,

Essex, Nov. 4. 1763.

A GENTLEMAN FARMER.

* We have, since the publication of the first edition of this Number, heard of several accidents happening through the mistake pointed out by our correspondent. R.

NUMBER XLIV.

A Letter to the Editors, from a Member of the Society of Arts, &c. containing a short Eulogy of the late PETER WYCHE, Esq; Fellow of the Royal Society, and one of the Chairmen of the Committee of Agriculture, in the Society for the Encouragement of Arts, Manufactures, and Commerce.

GENTLEMEN,

THE memory of men who have been valuable members of society should, with honour, be transmitted to posterity.

Permit me to condole with you on the great loss we have lately suffered in the death of Peter Wyche, Esq; a man, in his life deservedly beloved, at his death sincerely lamented.

His merit was not like the blaze of a meteor, which shines for a moment, and is seen no more; but it resembled the permanent light and warmth we are daily blessed with from the sun, designed to give birth to, nourish and support, whatever could be of real use to man.

A citizen of the world, his enlarged mind was not confined in the exertion of his great talents; he was prejudiced against no religion, attached to no narrow opinion, and an enemy to no country. Ingenuous, modest, and concealed merit, in whomsoever it was found, was always welcome to him; he cherished it, he encouraged it, and recommended it to notice: he was a pleasing and affable patron, and a candid and sincere friend.

No man could be better adapted to perform the duties of his office, as chairman of a committee, than Mr Wyche; he had great knowledge, and had had much reading and experience in matters that related to agriculture; he patiently heard what every member of the committee had to say, and as he had an excellent memory and power of retention, and a judgment capable of separating the pure metal from the dross and alloy, his opinion was often asked,
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and greatly depended on, in most determinations that were made.

He might, indeed, with great truth be called one of the fathers, and first promoters of the Society of arts, of which he was always a most useful member: to him alone is entirely owing the correspondence which the Society carries on with our American colonies; to him alone do we owe the thought of cultivating *burnet*, as an artificial pasture.

To the hospital, instituted for the maintenance of exposed and deserted young children, he was a zealous friend; he gave a constant and religious attendance at the house, and sacrificed a great deal of his time to promote the welfare of the poor helpless foundlings, which are the objects of that most excellent charity.

He was in his nature persevering; seldom attempting any thing without bringing it to perfection.

Indefatigable in his researches and observations, he hid not the candle under the bushel, but was of a remarkably communicative disposition.

England owes him much, the Society more: his loss is to be lamented as a public concern: yet his virtues are to be had in remembrance, and his good deeds conveyed to the latest posterity.

As he was possessed of a very handsome independent fortune, his actions could not be swayed by any motives of self-interest; influenced entirely by his general benevolence and love for mankind, and the particular affection he bore his country, he needed no other incitement for all the good he did.

The great qualities this friend of mankind possessed, had such a thick veil of modesty cast over them, that they might easily pass unnoticed by a common observer; but to a curious eye they appeared in a very different light: new and uncommon talents daily arose to view, and his great knowledge was, like the fragrance and beauty of the rose-bud, disclosed by slow degrees. He was one of the very small number of men whose conversation could never cloy a diligent enquirer into nature: in him we had a constant

stant opportunity of indulging the love of novelty, that passion so inherent to mortals; for so various and extensive was his knowledge, that it could not easily be exhausted, even by constant communication.

How unhappy is it for the world, that so few are possessed of that curiosity, which is so truly laudable, of searching, for the benefit of mankind, into the secrets of nature! and it is more particularly so, as by that means the good and useful qualities possessed by Mr. Wyche were thoroughly known only to a few; but the few who enjoyed so much happiness, knew how to set a proper value on them.

He lived not in vain; he was industrious, assiduous, and constant in his researches and enquiries: what others would have deemed a labour, became easy and habitual to him, nay, even necessary, as a kind of recreation and amusement to his ever-active mind.

His ideas were all methodised; and though he was a man of few words, he said all that was necessary on every subject he took in hand; if he had not grace in his delivery, if his sentiments were not clothed in the most elegant dress, yet did he never speak without the strictest attention of his auditors; never was he attended to by them, but it must be their own faults if they did not receive instruction.

By what has been said it is evident, Mr. Wyche possessed rather useful, than shining talents: he sought not praise, but rather shunned it: to reflect that he had done his country service, was to him reward sufficient; he wished not to be too much known; not through any indolence in his disposition, but because he was sensible that fame always carries with it a certain portion of envy; and of this passion he by no means desired to be the object.

I could not say less respecting what I may call this good man's public character. In private life he was, to the full, as amiable: he was the tender husband, the fond rational father, and the humane master.

He spent his days with a certain uniformity, which to most would have been irksome; but to him, whose attention was not to be engaged by common objects, it was

necessary: he knew the value of time, and fully enjoyed all the pleasures of contemplation.

In the latter part of his life, though no enemy to cheerfulness in others, he was incapable of partaking of true unmixed joy. His ideas were generally pre-occupied by one melancholy object: this occasioned that shade of sorrow which often overspread his countenance; and can we be surprized at it, when we reflect that its first cause was the death of his eldest son? a hopeful youth, endowed with every amiable quality, the worthy son of such a father, a blooming branch from which there was every reason to expect a large store of useful and delicious fruit: but the hopes of the world were blasted, and the father's soul deeply wounded; he was resigned, but he could not be cheerful, under his loss.

Though an enemy to no religion, he was very strict in the practice of that of the church of England, which he professed: he was a constant attendant on the public worship, and no less regular in his private devotions.

Being no advocate for faith without good works, his charity to the poor was extensive, who lost in him a friend and generous benefactor: the distressed objects, who often tasted his private bounty, now give ample testimony of their grief by their daily tears.

Mr. Wyche's goodness was no way ostentatious, for his chief aim was to glide easily through life, almost unnoticed. His charities he concealed as much as possible; neither would the world have known how truly humane and beneficent he was, but for his constant enquiries after persons in distress, on whom he might exercise his favourite inclination. He seldom smiled but when he had conferred a favour on the poor; and the innate, though almost invisible pleasure, these benefactions gave him, was all the reward, all the return he wished for.

He was plain in his apparel, and temperate in his diet; and after passing a life, which may with great justice be exhibited as an example worthy of imitation to posterity, he died, October the 31st, 1763.

This

This great man retained to the last those valuable talents which had made him so useful in life: a little more than a week before his death, he attended the committee as chairman, and though indisposed, he went through the business of the evening with his accustomed precision-

In his person, he was of a middle size; and frequent contemplation had given his countenance an air of seriousness, which might easily, by such as did not know him, be mistaken for reserve. His aspect was mild, his manners gentle; and though he had not made the study of politeness any part of the business of his life, he was affable, good-natured, and engaging, in his conversation and address. In short, both in his public and private character, he merited and enjoyed the approbation and esteem of all who were so happy as to be acquainted with him. If I have done justice to a worthy man's memory, I am content: of flattery I cannot be suspected, as I wish not to be known.

A BROTHER MEMBER of the
SOCIETY of ARTS, &c.

Nov. 12, 1763.

NUMBER XLV.

A Letter to the Editors, from a Gentleman in Hertfordshire, recommending his Method of brewing good Brown Beer, in some Counties called Brown-Stout.

GENTLEMEN,

I AM one of those singular men, who love to keep up some remains of the old English hospitality in my house; and for this particular purpose, I am never without a few hogheads of good brown strong beer in my cellar, for the benefit, not of my own immediate family alone, but of such comers and goers as are worthy of it.

You must know, I have many years been particularly curious in the brewing of this beer, insomuch that, if I am

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well,

well, I am generally copper-man myself, and superintend the boiling part.

I have taken a fancy to communicate my method in this operation to the public, and thought I could not hit upon an easier method of doing it, than by writing you the account in a letter.

If you find no inconsistencies, I hope inaccuracies will be overlooked.

I am very curious about the water I use, which is the softest I can get; and on this account I always take it from a clean neat pond, I have at the back of my house.

My time of brewing this beer is in March, which I reckon the best season; therefore, in the beginning of that month, I make my preparations in the following manner.

The first thing I do is to take as much water as I shall want in all my brewings, (for I brew now for the whole year) and boil it in my copper. After it is boiled, it is put into large tubs for the purpose, and exposed to the air, to cool and purge itself for at least a week.

I then begin my first brewing, having previously procured a sufficient quantity of the best brown high-dried malt, which is ground three or four days before it is used, that it may have time to mellow and dispose itself for fermentation.

When a copper of water is heated so as to boil, about three quarters of a hoghead is laded into the mash-tub, and the copper immediately filled again, and made to boil. When the water in the mash is come to such a state that you may see your face in it, I have, by degrees, nine bushels of ground malt emptied out of the sack into it: this is to be well mashed, and stirred about with the rudder for near half an hour, till the malt is all thoroughly wetted, and incorporated with the water: another bushel of malt is then lightly spread over the surface, and the whole being covered with the empty sacks to keep in the steam, it is left undisturbed for an hour.

At the end of the hour, the water in the copper being boiling, the fire is damped, and the water is left till you can

can see your face in it, after as much as is necessary is laded on to the mash, till the whole together will yield, when it runs off, a hoghead of wort; and this the workman is soon able to determine to a great nicety.

When this second quantity of water is laded on the mash, it is again well stirred and agitated, and being covered is kept quiet for another hour.

The first wort is then let out in a small stream into the under-back, and another hoghead of hot water is laded on the mash, which, after being well stirred with the rudder, is again covered, and suffered to rest for two hours.

In the mean time the first wort is returned into the copper, and six pounds of fine brown seedy hops are put into it, being first rubbed betwixt the hands. A brisk fire is then made under the copper, till the liquor boils, which is continued till the hops sink, after which the fire is damped, and the liquor strained into the coolers.

When it is come to be only as warm as milk from the cow, some yeast, or barm, is mixed with it, and it is left to work till all the surface appears in curls: it is then all stirred, and well mixed together with a hand-bowl, and again left to work: this stirring with the bowl is repeated three times, after which it is tunned, and left to work in the hoghead: when it is nearly done working, the cask is filled up and bunged, but the vent-hole is left open.

When managed after this manner, the beer I am writing about will keep for years, but it will be good drink the succeeding harvest.

As to the second wort, which I mentioned above, it is set by for the next brewing, to be used in manner following.

For my second brewing, as far as wetting my mash, I proceed in the same manner as at first; but afterwards, instead of water, I heat the second wort of my first brewing, and lade it on my mash, the new wort by this means acquiring a very considerable addition of strength and softness.

The second wort of this second brewing I make with water, and save it to form the first wort of my third brewing, and so on for as many brewings as I chuse.

I must observe that I take off a third wort from my first brewing, which I heat, and lade on my mash of my second brewing, after taking off the second wort; and by this means, out of two brewings, I get, besides, a hoghead of very good mild beer.

I do not pretend that my method of brewing, above described, is better than any other; but I am well convinced it is no bad way, as every body likes my beer, which, though high-coloured, is as clear as rock-water, and must be wholesome, as it is made of the pure and genuine malt and hops, without any other unwholesome mixture to adulterate it.

I shall be glad to see this account speedily inserted in your *Museum Rusticum*, and I may, perhaps, now and then send you a line or two, for I find, by your proposals, you would be glad of an extensive correspondence. I rest, for the present,

Your most obedient servant,

Hoddesdon, Nov. 8, 1763.

M.

NUMBER XLVI.

A Letter to the Editors, on the Culture of Turneps.

GENTLEMEN,

PERHAPS there never was a greater improvement in agriculture, than the practice of sowing turneps as food for cattle: the counties of Norfolk, Suffolk, and Essex are the places where this husbandry is practised in the greatest perfection.

In the last-mentioned county I live, and hold no inconsiderable quantity of land, and have, besides, a little farm or two of which I am owner.

I have many years sown turneps on my land, and find it a great improvement, insomuch that I heartily wish the knowledge of this culture was propagated more than it is over the whole kingdom.

I shall

I shall give you, for the public benefit, a few maxims, which may perhaps be of service, and the more so, as I know them to be both useful and profitable.

Land cannot be brought into too good tilth for sowing turneps: they require a deep, loose, well-wrought mould*; and to effect this, discreet plowing and harrowing is the best way. I say discreet, because one plowing, properly timed, is worth three that are out of time. It is a maxim in husbandry, that some land cannot be plowed too much; but we should add, at proper seasons and intervals, or an ignorant farmer might ruin himself, and yet think he had followed the directions that were given him.

A light land requires less plowing, as well as less nicety in the times of plowing, than a stiff heavy soil; and it is also sooner brought into good tilth: two well-timed plowings will often do it; whereas a clayey soil will require three or four, before it is brought into order.

An early plowing will greatly forward the getting a stiff soil into order: the month of April should be the latest that such, when intended for turneps, should be turned up. It may then lie till the beginning of June, when it should be harrowed down with loaded harrows to break the clods, and immediately cross-plowed: about a fortnight after this
it

* Mr. Miller observes, that the soil properest for turneps is a light, sandy, loamy earth, not rich; for in a rich soil they grow rank, and are sticky; but if the soil is moist, they will thrive better in summer, especially in fresh land, where they are always sweeter than upon an old worn-out, or a rich soil. He says he has seen the roots of the green-topped turnep, which were more than a foot diameter, boiled, and were as sweet and tender as any of the smallest roots. This we readily believe, as having often eat this large field-turnep in the country, and it always proved sweet and good. They do not, in general, grow so large as those Mr. Miller mentions. That turneps are sweetest on undressed fresh land, is an undoubted fact; yet will they thrive extremely well on rich manured land, and be very proper for fattening cattle, though not, perhaps, quite so good for the table: this scores of farmers, in Norfolk and Suffolk, can testify; for, where so many turneps are annually sown, were they ever so nice, it would be impossible to find fresh land for every crop. Fortunately there is little occasion for this nicety. N.

it should be plowed for the last time, and immediately cross-harrowed and sowed out of hand with the turnep-feed pretty thick, and scratched with a light harrow to cover the seed.

Light lands, as I said before, may do very well with two plowings, one in the spring, and the other just before sowing at Midsummer *.

I look upon it, that turnep-feed cannot well be sown too thick, for it seldom all comes up, and, of what does get above ground, much is often destroyed by the fly, and slug; so that the plants sometimes, though the seed was sowed thick, require but little thinning by the hoe. In fact, I think it better at first to bestow an additional quantity of seed, than to have to sow two or three times over, as I have been often obliged to do, till I practised this method of sowing thick, which generally succeeds very well with me †.

The beginning of July is the time in which I, for the most part, sow my turnep-feed: in this matter the grand affair is to hit it off, so that the turneps do not grow sticky or spongy before the winter, and yet are forward enough in their growth to resist the frosts, &c. and be fit food for the cattle in the winter, or in the spring.

To have a good and profitable crop of turneps, it is absolutely necessary they should, at proper times, be hoed, not only to kill the weeds, but also to thin the plants, and set them out at a proper distance.

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* The common season for sowing turneps, says Mr. Miller, is any time from the beginning of June, to the middle of August, or a little later; though it is not adviseable to sow them much after; because, if the autumn should not prove very mild, they will not have time to apple before winter: nor will the roots of those which are sown after the middle of July grow very large, unless the frost keeps off long in autumn.

† The quantity of seed generally allowed for an acre is one pound; but we think our correspondent's method worthy of being recommended, and that two pounds, at least, should be sown, and this the sooner, as it is a cheap seed: it is an easy matter to hoe up the supernumerary plants, if they all come up and escape the fly. N.

The proper time for the first hoeing, is when they have put forth their fourth leaf, and the second hoeing should be in about three weeks afterwards: twice is, in general, enough, unless a very following rainy season should come on, when it will be proper to take the advantage of the first fine sun-shine weather, to give them a third hoeing: this, indeed, is often neglected, but I always found it pay well, by the thriving condition it put my crop in *.

As to the distance at which the plants should stand one from the other, that must be regulated by the size of the turnep; but it should be never less than one foot, nor is there occasion for its being more than two: about sixteen or eighteen inches is a proper distance for the common turnep we generally sow about me †.

If the soil, on which the turneps grow, is light and dry, the most profitable way is to feed your sheep on them in the spot where they grew; but if the soil is heavy and stiff, it is best to have them pulled, and carried in tumbrils on to some dry pasture, or on any dry field you want to mend; for was you to feed them on the land, one half of them, at least, would be rolled in the dirt, trodden under foot, and spoiled.

Land cannot be too rich, or too well dunged, for bearing turneps ‡; and this will bring them forward, and make them

* The chief advantage of this third hoeing, was probably derived from stirring the earth about the roots of the plants, which, consequently, gave them a greater facility of extracting the nourishment, necessary for their growth, from the earth. As to the weeds, after two good hoeings the turneps will generally have over-topped them. T.

† It is a great fault to leave the turnep-plants too close at hoeing: the distance will, as our correspondent observes, depend on the kind of turnep; but a great deal will also, in this matter, depend on the nature and quality of the soil: if it is very rich light land, the turneps will grow to an amazing size, and the plants should, in that case, be left at near two feet distance: if, on the contrary, the soil is stiff and poor, the turneps will be but small, and the plants may be left at about a foot asunder. N.

‡ This is the Norfolk maxim; but Mr. Miller thinks fresh unmanured land is best. See a former note, in which this matter is handled somewhat more at large. N.

them escape the fly better ; for when once the leaves become rough, the fly does not chuse to touch them : it is therefore certainly best to encourage them in their growth, and bring them as soon as possible out of danger.

When my young crop of turneps have come up, and I have been fearful of the fly, I have frequently sown over them wood ashes, and sometimes foot * : these have been of great service, especially if gentle rains followed, as neither the flies nor slugs chose afterwards to touch them. But I must observe, that this is no safe remedy, if the weather is dry and hot, for ashes being of a hot nature, will then be apt to burn up the crop.

As to the slugs, the best way of destroying them in dry weather is with a light roller : this crushes and kills them, and does the crop service, especially if it is light land ; for it presses the particles closer, so that the moisture in the earth is not so soon exhaled by the heat of the sun ; consequently, the young turneps do not so soon suffer by a continued drought †.

It

* Mr. Miller observes, that there have been many receipts for preventing the fly taking turneps, but that few of them deserve notice. He mentions, however, two or three which he had tried with success. The first was steeping the seeds in water with flour of brimstone mixed, so as to make it strong of the brimstone ; another was steeping it in water, with a quantity of the juice of horse-aloes mixed ; both which have been found of use. He adds, that the sowing of foot, or tobacco-dust, over the young plants, as soon as they appear above ground, has also been found very serviceable ; in short, whatever will add vigour to the young plants, will prevent their being destroyed by the fly, for these never attack them till they are stunted in their growth.

† Mr. Miller takes notice of another enemy to a crop of turneps ; that is, the caterpillar, which very often attacks them when they are grown so large as to have six or eight leaves on a plant : we suppose he means in the neighbourhood of London, as this accident is seldom known in the country. However, he adds, that the surest method of destroying these insects, is to turn a large parcel of poultry into the field, which should be kept hungry, and turned in early in the morning : these fowls, he says, will soon devour the insects, and clear the turneps. The nature of this remedy convinces us, he must mean, that caterpillars infest turneps near the metropolis, where they are sown only in small plots,

compared

It is scarcely necessary to observe, that dry weather is best for hoeing turneps in, as then neither the weeds nor the turneps that are cut up are apt to grow again.

In light gravelly or sandy soils, the seed of turneps may be deeper covered than in stiff clayey land: in the first, it may be pretty well harrowed in; in the latter, it should only be slightly scratched with a very light short-tined harrow, or even only bush-harrowed; as by that means they will sooner appear above ground, be sooner out of danger, and thrive better afterwards, the apple of the root growing almost entirely out of the ground, the whole nourishment being collected by the tap-root, and by the horizontal roots, which issue from it on all sides.

The quantity of seed to be sown on an acre, should be from two to three pounds *, according to its goodness; and many use equal quantities of old and new seed, thinking this method best; for the new seed comes up first, and if the fly takes it, the old seed in a day or two succeeds, and generally fares better.

If a crop of turneps fails, either through any defect in the seed, or by the ravages of the fly or slug, it is usual for the farmer to sow the same land again; and this, if there is occasion, he repeats two or three times, till at last he secures himself a crop. For the reason above mentioned, it is esteemed best to sow early, as by that means there will be time, if the first crop fails, to sow another.

Turnep-seed is very apt to take damage from wet, if it is not covered as soon as sown: without this precaution it

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E e

will

compared to the extensive tracts annually sown for feeding cattle in Norfolk, and the adjacent counties. We imagine a farmer, who sows, perhaps, fifty acres of turneps, would be puzzled to find a sufficient quantity of poultry to clear his crop of the caterpillars, should it chance to be infested with them: when it is the case, some other more effectual remedy must be found for him at least. N.

* Even on our correspondent's principle of sowing thick, perhaps two pounds of seed, if it is good, will be found sufficient for an acre of land. A fourth part of that quantity would do, was it not for the many dangers to which the crop is exposed. N.

will sprout prematurely, malt, or mould : by too early a germination the seed is apt to burst.

When peas are sown on a rich mellow earth, they are apt to grow rank : in this manner they cover the ground, keep the moisture in it, raise a kind of fermentation in the soil, and make it hollow and porous ; insomuch that when the crop has been off, turneps have been harrowed in without plowing, and have thriven amain : but there is danger in pursuing this practice without great caution. More I reserve for another occasion.

I am, GENTLEMEN,

Aug. 14, 1763.

Your humble servant,

AN ESSEX LANDHOLDER.

N U M B E R XLVII.

A Letter to the Editors on Sheep-Shearing, and on the Rot in Sheep.

GENTLEMEN,

A Favourable reception of this letter may be a means of continuing me your correspondent.

I have had some experience in what relates to sheep, and am not unwilling to impart some of the knowledge I have been many years accumulating.

I shall at this time chiefly confine myself to shearing. Contrary to the opinion of many farmers, I think early shearing is by much to be preferred on many accounts : some defer doing this work till at or after Midsummer ; but this is to be avoided, as very bad consequences often ensue. By this late shearing, the maggot has an opportunity of breeding in their skins ; and this frets them in such a manner, that they often pine away and lose all their flesh.

This is easily prevented by early shearing ; and I, for my particular part, if the weather is any thing tolerable, generally do this work about the middle of May, and sometimes the beginning of that month : by this method the new growth of wool has time to get a-head, so as to secure the sheep from the attack of the fly. It is true, that at this time

of

of the year the weather is often cold, and chilling rains fall, which might endanger my new-shorn sheep, was no farther care taken of them: but this danger I always guard against, by washing my sheep, after shearing, with salt-water taken from the Medway *: this is of great service in killing any vermin that may harbour close to their skins; and, besides this advantage, the penetrating quality of the salt so warms this animal's mass of blood, that it is a great means of preserving it from many disorders to which it is fatally subject; such as the gripes, scab, red-water, rot, &c. &c. &c. This, I say, has been my practice ever since I have lived in Kent; but before that time, when I was not within distance of the sea or Medway, to get salt-water from thence, I always made a brine of a proper strength with common salt and soft water, and applied it to the same use with equal benefit, though it cost me, to be sure, somewhat more. When my sheep have sores, either by the bite of flies, or by scratching, &c. I find the best remedy to be that which is commonly in use, *viz.* a little tar applied to the wound: many, if you ask their advice, will, by way of shewing their judgment, prescribe to you complicated mixtures, which have no other merit but being more expensive: but be assured, the more simple the remedy, the speedier the cure.

Many farmers suffer great losses by buying sheep that are rotten; for which reason, every prudent man should, when he buys a lot of sheep, agree with the seller, that he shall warrant them sound for a month at least: this would prevent many heavy losses, and be a means of guarding honest men from being imposed on. If sheep are the least inclinable to the rot, the best remedy is to drive them directly into a dry upland pasture.

E e 2

I have

* In Kent, near Hiam-kill-marsh-priest, about ten miles from Gravesend, they wash their sheep in the following manner. There being creeks that are muddy when the tide is down, but when the sea flows are deep in water, they tie ropes to three or four sheep of the flock, and draw them over, the rest willingly following; and then the said sheep are drawn over again in the same manner; and by the time they have swam over seven or eight times, which is as often as they well can do in a tide, they will be well washed. *Lisle's Observations on Husbandry.*

I have mentioned above, that I shear my sheep sooner than most of my neighbours *; but I should also have observed, that I always shear my fat wethers first †, as they are best able to bear the cold; and I reserve my poor sheep till last, as the cold and chilling rains pinch them more than the others ‡.

As I have mentioned the rot, I shall just take notice of a remedy which I have often tried with success: it is very cheap, and is almost always to be procured, which is a great recommendation. I take a quantity of rue leaves, which I bruise well, and then press out the juice: to this juice I add
an

* The author quoted in the last note, in treating of shearing, has the following observation. "I never used," he says, "to shear till the Monday before Midsummer-day; but I now (anno 1714) find I was in an error in so doing; and that, as my keeping is very good, by which means the wool grows the larger, and heats the sheep the more, and their fleshiness being such as to bear the cold the earlier in parting with their fleeces, I ought to begin to shear the first week in June; and the sheep would not only thrive much the better, when the load of their wool was gone, but their new wool would also have more time to grow against Wayhill fair, which would make the sheep look more burly." Sheep, when shorn, have better stomachs, for the heat of the wool takes away their appetites.

† Mr. Lisle, in his observations, says,—Mr. Weedon and Mr. Cowslade, of Woodhay, usually shear and wash their fatting sheep by May-day: the reason they give for it is, because their inclosures are very small, and consequently too hot, and therefore their fatting sheep need to have their coats off so much the earlier, and they thrive the better for it.

‡ We cannot but in general approve of the early shearing of sheep, beginning with the fattest; but no certain day can, with reason, be fixed for doing this work; for our seasons differ so much in various years, that next year, in the beginning of May, the weather may be so warm as to be very proper for the work; and in the following year, the middle of the same month may, on account of the cold, be too soon to begin. The best regulator for this work, as well as many others, would be the state of vegetation, from repeated observation of some particular tree or plant, on a particular soil and exposure; for to bring plants to a certain state, requires always a certain degree of heat, and this is sooner or later, according to the season. Every work of husbandry, in spring at least, might be regulated in the same manner, and that to great advantage, for nature is an unerring guide. N.

an equal weight of salt * ; and when any of my sheep are in great danger of being rotten, I give them a table-spoonful of this once a week ; and if they are not so bad, once in ten or twelve days : this I have experienced to be of exceeding great service, and have recommended it to several, who have had equal success : it is an excellent preservative, and should, in fact, always be given to new-bought-in sheep ; it may preserve them in health if they are in danger, and can do them no harm let them be ever so well.

Perhaps the matter contained in this letter may not be so curious as you could wish ; yet will it at least convince you of the inclination I have to commence your correspondent ; and in this sentiment I shall, I believe, continue as long as my letters meet a good reception : should I be, on the contrary, thought rather troublesome, a small hint will prevent my repeating the offence.

You may assure yourselves I approve of the plan you have laid, or I should not have thought of furnishing materials towards the structure : such as they are, accept them with good will from,

GENTLEMEN,

Kent, Oct. 15, 1763.

Your humble servant,

G. K.

NUMBER XLVIII.

A Letter to the Editors, on the Subject of Blights, with a Hint towards a Remedy.

GENTLEMEN,

MANY are at a great loss to know from whence come the vast number of caterpillars, which are every spring found on the fruit-trees, and in the nursery-grounds, about London. In some years they abound to such a degree,
as

* The large proportion of salt in this medicine, which we doubt not may be very good, brings to our recollection a letter on the wholesomeness of salt to cattle, read before the committee of agriculture, and inserted in this collection : it is marked Number XIX. page 97, to which we refer the reader. Perhaps, if salt was laid for sheep, it might be of great service to them. O.

as to be a very great nuisance to the gardeners : in dry seasons they do much mischief, and destroy large quantities of fruit. Many remedies have been, at different times, prescribed, but few of them have been attended with any success at all in the application.

Some burn horse-litter under the trees, or to windward of them ; others drench the branches with water in which tobacco-dust has been steeped ; and many use water alone to wash them.

These several methods may possibly do some good, but they are far from being either certain or general remedies.

When the insects have seized on a fruit tree, it assumes a withered sickly appearance ; the leaves shrivel and change their colour, and the tree is said to be blighted.

This blight* is generally thought to be either brought, or greatly promoted, by easterly winds ; and indeed it is, in some

* Mr. Miller observes, that how specious soever the conjectures concerning blights may appear at first sight, yet when duly considered, they will be found far short of the true cause. He says blights are often caused by a continued dry easterly wind for several days together, without the intervention of showers or any morning dew, by which the perspiration in the tender blossoms is stopped, so that in a short time their colour is changed, and they wither and decay ; and if it so happens that there is a long continuance of the same weather, it equally affects the tender leaves ; for their perspiring matter is hereby thickened and rendered glutinous, closely adhering to the surface of the leaves, and becomes a proper nutriment to those small insects, which are always found preying upon the leaves and tender branches of fruit-trees whenever this blight happens : but it is not these insects which are the first cause of blights, as hath been imagined by some, continues Mr. Miller, though it must be allowed, that whenever these insects meet with such a proper food, they multiply exceedingly, and are instrumental in promoting the distemper ; so that many times, when the season proves favourable to them, and no proper care hath been taken to prevent their mischief, it is surprising to think how whole walls of trees have suffered by this infection. The best remedy for this, adds our author, is gently to wash and sprinkle over the trees, from time to time, with common water, (that is, such as hath not had any thing steeped in it) ; and the sooner this is performed (whenever we apprehend danger) the better ; and if the young and tender shoots seem to be much infected, wash them with a woollen cloth, so as to clear them, if possible, from all this glutinous matter, that their respiration and perspiration may not
be

some measure, probable ; for at this time of the year, about London, any curious and attentive observer may see, on almost all the hedges &c. multitudes of small webs containing nests of caterpillars ; and on carefully opening these webs, thousands of minute insects may be seen in cells : they are now about the size of a middling pin, and about the twentieth part of an inch long : on being held to the warmth of a fire, they quit their torpid and inactive state, and assume a brisk and lively motion.

I had an opportunity, within these few days, of seeing many of these webs, or nests of insects, plentifully scattered on almost all the hedges about Kensington, Chelsea, Brumpton, Fulham, Hammer-smith, Waiham-Green, and North-End, where nursery-grounds abound : these lie in store to send forth their voracious numbers, in the spring of the year, to devour the fruits of industry ; and the evil seems to have got to so great a head, that the gardeners despair of getting rid of these devourers, as they know of no certain method by which they can attain that desirable end.

Talking to a very intelligent man on this subject, he told me, that, in his opinion, one very principal reason why the environs of London are so particularly pestered with these blights, is, there being such large quantities of pruned trees and cut hedges there ; for all vegetables become more or less of a sickly disposition, when the course of the sap in them is checked either by accident or design ; and trees in this sickly state * are well known to be more subject to blight, than

be obstructed ; and if we place some broad flat pans or tubs of water near the trees, that the vapours exhaled from it may be received by the trees, it will keep their tender parts in a ductile state, and greatly help them : but whenever this operation of washing the trees is performed, it should be early in the day, that the moisture may be exhaled before the cold of the night comes on, especially if the nights are frosty ; nor should it be done when the sun shines very hot upon the wall, which would be subject to scorch up the tender blossoms.

* Mr. Miller seems to border on this opinion in the following passage on this subject : his words are as follow. “ That blights are frequently no more than an inward weakness or distemper in trees, will evidently appear, if we consider how often it happens,

than others that are vigorous, flourishing, and unwounded by the pruning knife or shears.

One circumstance respecting this blight is very remarkable, which is, that to the westward of London the effects of it decrease by insensible degrees, insomuch that at forty miles distance very little of it is seen; and at a hundred miles and upwards, about Bath, Bristol, Wells, Bridgewater, &c. they know not what it is; and this is also the case

“pens, that trees against the same wall, exposed to the same
 “aspect, and equally enjoying the advantages of the sun and air,
 “with every other circumstance which might render them equally
 “healthy, yet very often are observed to differ greatly in their
 “strength and vigour; and as often we observe the weak trees to
 “be continually blighted, when the vigorous ones in the same
 “situation shall escape very well, which must, therefore, in a great
 “measure, be ascribed to their healthy constitution. This weakness, therefore, in trees, must proceed either from a want of
 “a sufficient supply of nourishment to maintain them in perfect
 “vigour, or from some ill qualities in the soil where they grow;
 “or, perhaps, from some bad quality in the stock, or inbred distemper of the buds or cyons, which they had imbibed from
 “their mother-tree, or from mismanagement in the pruning, &c.
 “all which are productive of distempers in trees, and of which
 “they are with difficulty cured. Now if this is occasioned by a
 “weakness in the tree, we should endeavour to trace out the true
 “cause: first, whether it has been occasioned by ill management
 “in the pruning, which is too often the case; for how common
 “is it to observe peach-trees trained up to the full length of their
 “branches every year, so as to be carried to the top of the walk
 “in a few years after planting, when, at the same time, the shoots
 “have been so weak, as scarcely to have strength to produce
 “their flowers? But this being the utmost of their vigour, the
 “blossoms fall off, and many times the branches decay, either
 “the greatest part of their length, or quite down to the place
 “where they were produced; and this, whenever it happens to
 “be the case, is ascribed to a blight. Others there are who
 “suffer their trees to grow just as they are naturally disposed,
 “during the summer season, without stopping of shoots, or disburdening their trees of luxuriant branches; by which means
 “two, three, or four shoots, shall exhaust the greatest part of the
 “nourishment of the trees all the summer, which shoots, at the
 “winter-pruning, are entirely cut out; so that the strength of the
 “tree was employed only in nourishing useless branches, while
 “the fruit-branches are thereby rendered so weak, as not to be
 “able to preserve themselves.”

case with the inhabitants of the more western parts in Devonshire, Somersetshire, Cornwall, &c.

This is at least a circumstantial evidence of its coming from the east; but whether the eggs of the insects are brought in the current of the easterly winds, or whether these winds are only particularly favourable to their hatching, and the growth of the insect, I shall not pretend to determine.

Where valuable fruit-trees are infested with this blight, they may, with a little trouble and expence, be in a short time cured, by fumigating them with brimstone strewed on lighted charcoal: this effectually kills them; but the workman must observe to get to the windward of the tree, as the fumes, both of the brimstone and charcoal, are very offensive and pernicious *.

I should be glad that some more easy method than even this could be found out of destroying these nests of vermin; and I despair not, but by means of some of your many correspondents it will soon be effected, when I doubt not, but they will give you an immediate opportunity of communicating it to the public, in your very useful and excellent collection †.

I hope, for the benefit of these islands, that you will be enabled regularly to continue your publication, as it is, in fact, not only the most proper repository for fugitive pieces on the subject of husbandry, but is also the only channel of intelligence, by which the good methods of practice of one part of the kingdom may be communicated to another.

I am,

London, Nov. 14, 1763.

Your humble servant,

A LOVER OF AGRICULTURE.

* See in general what Mr. Miller says on this subject, in his Gardener's Dictionary, under the title Blights.

† We should be very glad to hear from our correspondents on this subject, which has hitherto been but little investigated, if we reflect on the great importance of it. E.

NUMBER XLIX.

A Letter to the Editors, from a Hertfordshire Farmer, recommending Soot as a proper Dressing for Meadows.

GENTLEMEN,

AS your collection is intended for a kind of a channel of intelligence, from one part of the kingdom to the other, in matters of husbandry, &c. I take this first opportunity of troubling you with a few of my thoughts.

Many farmers, in some counties, are at a great loss to find a proper dressing for their meadows : to such I would recommend the use of coal-soot, than which nothing can be more profitable and advantageous ; its effects will be very visible for upwards of three years, during which time no other manure need be laid on the land.

Coal-soot * is of a very warm refreshing nature : it cherishes and gives nourishment to the grass ; it kills the noxious insects that infest the crop, and protects it from the effects of frosts, snows, and chilling rains ; and what is still of greater consequence, it will kill the moss that so often abounds in our meadows †.

I must not, however, fail noticing, that soot will not have these good effects if the meadow land should be so damp as to require draining : in this case cuts must be made across it, in proper directions, previous to the laying on the coal-soot, which would otherwise be of little service.

All rank weeds should be carefully grubbed up from among the grass, and that before they have perfected their seeds ; without which precaution, in point of time, the work would be to do over again.

The

* Soot is an excellent dressing for green wheat in February ; it should be sown by hand, in quantity sufficient to blacken the land. This is frequently practised in Leicestershire, and many other counties. It is of a warm nature, therefore it does most good on cold, moist, clayey soils. R.

† The winter is the proper season for sowing soot on meadow ground. R.

The general quantity I lay on an acre of meadow land is twenty-five loose bushels : more I find to be rather prejudicial, and less does not answer all the purposes we are to expect from this excellent manure.

The best time for applying this dressing, I take to be the beginning of the spring : about February is the time I generally lay it on * ; the gentle rains which then, for the most part, ensue, wash it into the land, and the following crop is greatly benefited by it. This is very soon visible from the fine deep verdure which the grass assumes.

Some of my meadow land is particularly subject to be damaged by frosts, snows, &c. on this I generally lay the proper quantity of foot in the beginning of November ; and sometimes, if the winter is likely to be severe, I venture to allow thirty bushels to an acre, which in other cases I never do.

Having myself found great benefit by using this coal-foot as a manure for meadows, I am willing my brother farmers should know it, that they may have it at their option to adopt the practice, if they approve of it.

It will be very well worth their while, provided they can have it at a reasonable rate, which they may, above twenty miles from London, by land-carriage, and wherever there is a communication by water, though at almost ever so great a distance.

Other great towns also, where sea or pit-coal is burnt, may supply the farmers with it ; but the misfortune is, that where it is in the greatest plenty, they least know the use of it.

Great care, however, should be taken to get it genuine and good, the *merchant chimney-sweeper* frequently, to increase the bulk, mixing fine sifted coal-ashes with it : this is a great fraud, but may easily enough, with proper care

F f 2

and

* We have already mentioned we think it best done in winter, and that for this reason, *viz.* that the first rains after the frost breaks will wash it into the land, and warm and cherish the roots of the grass ; whereas, when it is laid on in the spring, it may by its great heat affect the blade and heart of the grass, and for a time, at least, stop the progress of its vegetation. R.

and circumspection, be discovered, for the ashes make the foot gritty, and encrease its weight in a very sensible degree.

Before I conclude this letter, I must give my brother farmers a caution; which is, that they never lay the foot on land in windy weather, as not only great part of it will be lost and wasted, but the remainder will be so unequally disposed, as to do rather more harm than good.

Should any thing else occur to my recollection, which may be of service to the lovers of agriculture, and proper to be inserted in your collection, I shall not fail communicating it to you, being firmly of opinion, that I shall thereby merit something of my country; and, indeed, I sincerely wish this same motive would prompt every one, capable of doing it with propriety, to write you the result of their experience, in the subjects of which your work is to consist.

I am, GENTLEMEN,

Your most humble servant,

Hertfordshire, Aug. 1, 1763.

A FARMER.

NUMBER L.

A Letter to the Editors, on the Proportion betwixt the Irish and English Acre.

GENTLEMEN,

GIVE me leave to point out a mistake, in page 94, of your *Museum Rusticum & Commerciale*, (the piece marked Numb. XVIII.) as it may tend to lead your farming readers astray in a capital point. The Irish acre is there said to be to the English, as 21 to 16 $\frac{1}{2}$; whereas, the divisions of both acres being of the same name, and in the same ratio, and the Irish pole, long-measure, being 21 feet, or seven yards; the English pole, long-measure likewise, but 16 $\frac{1}{2}$ feet, or 5 $\frac{1}{2}$ yards, and the feet and yards in both kingdoms equal; the Irish square pole must be to the English square pole, consequently the Irish acre to the English, as the square of 7 to the square of 5 $\frac{1}{2}$, or as 49 to 30 $\frac{1}{4}$, or, in round numbers, as 196 to 121.

I am, GENTLEMEN,

Your most humble servant,

D. C.

NUMBER LI.

A Letter to the Editors, on the Nature and Uses of Peat-Ashes, and the several Crops to which they may be profitably employed as a Manure.

GENTLEMEN,

THE more general a manure is in its uses, of so much the more value is it to the farmer; and, of all sorts of manures, perhaps ashes agree with the greatest variety of soils and crops: ashes *, therefore, should, one would imagine, be had in universal request, for the purpose of dressing land; but the misfortune is, no great plenty can be procured, and the few that are to be got fetch a large price: this deters the farmer from making use of them often as manure.

I must, however, except one sort of ashes, which are on all accounts valuable; I mean peat or turf-ashes: these are, in most places, easy to be procured, cost no great matter, and have a wonderful effect on almost every soil and crop. You may believe what I say, as I have had many years experience of their good qualities.

The sulphureous and saline particles with which these ashes abound, have a most happy effect in promoting vegetation; and if used with discretion, the increase procured by them is truly wonderful.

I suppose few of your readers will be at a loss to know what peat or turf is, most people having seen a kind of it burnt as fuel.

The ordinary peat is dug from wet bogs and morasses; but that which is of a much superior quality and virtue in its ashes, is dug from moory wet fish lands, which will bear cattle: as to the peat that is pared from the surface of heaths

* All kinds of ashes have their several degrees of excellence; yet some are much to be preferred to others; and perhaps peat-ashes, on account of the quantity of salts and sulphur they contain, are at least as good as any. R.

heaths and commons, for firing for the poor cottagers, the ashes of it are of very little value, when compared with those above mentioned.

Peat is found in most low grounds that lie betwixt hills, especially if timber has formerly stood on the spot. It lies at various depths, being often near the surface, and sometimes six, eight, or ten feet deep, having a stratum of black moory earth over it, such as is the soil of many of our low meadows near the banks of rivers: it sometimes even lies under a bed of gravel.

Peat may be burnt, for the sake of procuring its ashes for manure, all the summer season: as soon as it is dug, some of it is mixed in a heap regularly disposed with faggot-wood, or other ready-burning fuel: after a layer or two of it mixed in this manner, peat alone is piled up to complete the heap. A heap will consist of from one hundred to a thousand loads.

After setting fire to it at a proper place, before on purpose prepared, it is watched in the burning, and the great art is to keep in as much of the smoke as possible, provided that as much vent is left as will nourish and feed the fire.

Whenever a crack appears, out of which the smoke escapes, the labourer in that place lays on more peat; and if the fire slackens too much within, which may easily be known by the heat on the outside, the workman must run a strong pole * into the heap in as many places as is necessary to supply it with a quantity of fresh air. When managed in this manner, the work goes on as it should do. It is to be noticed, that when once the fire is well kindled, the heaviest rain does it no harm whilst it is burning.

Having procured a sufficient quantity of ashes, the farmer's next care should be to apply them properly to use; and to do this, he must be made well acquainted with the nature of the manure he is to lay on his land.

All

* This peat seems to be burnt much after the manner in which charcoal is made; though there cannot be so much delicacy necessary in the operation. R.

All ashes are of a hot, fiery, caustic nature; they must therefore be used with caution. With respect to peat-ashes, almost the only danger proceeds from laying them on in too great quantities at improper seasons.

Nothing can be better than peat-ashes for dressing low damp meadows, laying to the quantity of from fifteen to twenty Winchester bushels on an acre: it is best to sow them by hand, as they will then be more regularly spread.

This work should be done in January or February at latest, that the ashes may be washed in towards the roots of the grass by the first rains that fall in the spring.

If they were spread more forward in the year, and a speedy rain should not succeed, being hot in their nature, they would be apt to burn up the grass, instead of doing it any service.

It is to be remembered, that the damper and stiffer the soil, the more peat-ashes should be laid on it; but in grass-lands the quantity should never exceed thirty Winchester bushels, and on light warm lands less than half that quantity is fully sufficient.

On wheat-crops these ashes are of the greatest service, but they must be laid on with the utmost discretion. Were they to be spread in any quantity before the winter, after the sowing the corn, they would make the wheat too rank, and do more harm than good*; was the spreading this manure, on the contrary, deferred till the spring, the corn could not possibly during the winter season be benefited by it. After due reflection and repeated experience, my method of management in this case is as follows.

About the beginning of November, before the hard frosts set in, I sow on every acre of my heavy clayey wheat land about eight Winchester bushels of these ashes; on my lighter warmer lands in wheat, I sow only four bushels at this season.

The winter-dressing is, I imagine, of great service: trifling as the quantity may seem, it warms the roots of
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* This seems, by our correspondent's account, to be upon the whole a critical manure, but may with proper care be of great service. N.

the plant, brings it moderately forward, preserves its verdure, and disposes it to get into a growing state the first fine weather after Christmas.

About the latter end of February, or the beginning of March, on the above-mentioned heavy lands in wheat I bestow another dressing of ashes, by sowing of them on every acre eight bushels more: on my light lands, in this second dressing, I allow only six bushels.

These ashes laid on in the spring are of the greatest service, without any probability of danger: if rain falls within a few days after the dressing is laid on, it is washed in, and has a happy effect on the succeeding crop, co-operating with the manure that was laid on in November: if, on the contrary, dry weather for a long continuance succeeds, the first winter-dressing has its full effect, and the quantity laid on in the spring is in fact so small, that there is very little probability of its burning or hurting the crop.

This method has succeeded very well with me, and I have no reason to think it can fail with any one else.

This excellent manure is, I find, of great use in the turnep-husbandry on many accounts, particularly as it much contributes to preserve the young crop from being devoured by the fly *.

When I sow my turneps, before I harrow in the seed, I have eight bushels of these ashes strewed by hand on every acre, and when the plants shew their first leaves above ground, I sow on every acre four bushels more: by this management my crops seldom fail, when at the same time some of my neighbours sow their turnep-land three or four times over.

But one of the principal advantages derived from these ashes I have not yet mentioned, which is the very great service they are of to every kind of artificial pasture.

Saintfoin receives great benefit from this manure, and so does clover, ray-grass, and trefoil, provided it is laid on with discretion: the proper season is about the month of February: the quantity must be regulated by the nature of the

* The hot caustic taste of the ashes may very probably render the young leaves of the turneps disagreeable to the fly. N.

the crop and soil ; but, in my opinion, it ought scarcely in any instance to exceed thirty Winchester bushels. Clover, with the help of this manure, grows with great luxuriance, insomuch that I have often had two large crops of hay from the same field in a year, and good autumn feed afterwards.

But the effect of it is most seen in tares or vetches, and on them it is I bestow most of this manure, as they will bear it, being a very succulent plant. I had last summer a crop of tare-hay that was astonishing, by the help of these ashes, being above three large loads on an acre *. The field contained six acres ; it was a dryish loam, and not very rich. In the beginning of February I caused ten bushels, Winchester measure, to be strewed on each acre ; immediately after the first rains had washed them in, the same quantity was in like manner spread, and about the middle of March I bestowed on each acre six bushels more for the last dressing. I am fond of dividing my entire quantities, thinking my crops are thereby less exposed to the danger of being burned, and the manure is besides more gradual and lasting in its effects.

My tares came on amazingly, but they run chiefly to haulm, which was what I wished, not having any desire of saving the seed, but intending to make the crop in hay : my only fear was, that it would rot on the ground before it was in a proper condition to cut ; but this I luckily escaped, by the soil being tolerably dry, and by the fineness of the weather. It was so heavy in the swarth, that I was obliged to pay an extraordinary price for mowing it.

I have observed above, that I was fearful my tares would have rotted on the ground before they were fit to cut ; this was owing entirely to the invigorating quality of the ashes, which by their salts, &c. promoted the growth of the plants even to luxuriance.

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Before

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Before

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Before I well knew the great fertilizing quality of these ashes, I lost, by improper management, a fine three-acre piece of hog-peas. I laid on this field, soon after the peas came up, threescore Winchester bushels of these ashes at one dressing: this brought them forward a great pace, but at harvest I found, to my grief, I had scarcely any corn, for I had overdone it in laying on so much, and the peas were run all to haulm*.

Ever since this accident I have declined using them as a common dressing for my peas; and this I have been the more induced to do, as, in several little experiments I have since made, I have found it extremely difficult to apportion the several quantities which ought to be laid on various soils when sown with peas; for the quantity that has one year succeeded very well with me, has the next, owing to the difference of seasons, on the same soil, in another part of the same field, totally disappointed me; so that, for peas, I esteem it a very critical manure, therefore very cautiously to be used.

The effects of this manure will be visible at least three years, and it does not, like some others, leave the land in an impoverished state, when its virtues are exhausted and spent.

Peat-ashes are not so certain a manure for barley and oats as for the winter-corn: for as these are quick growers, and occupy the land but a few months, this warm manure is often apt to push them forward too fast, and make them run too much to coarse straw; yielding only a lean immature grain. Oats, however, are not so apt to be damaged by it as barley.

To get a good crop of barley, I often sow it after turneps, which have had two light dressings of ashes, in the manner above described.

When the turneps are fed off, or drawn, I give the field, if the season permits, a good plowing: if they were fed off, the land will want no more ashes; but if they were drawn, and either carried into another ground to feed sheep, or given
to

* Peas rather require a sweet soil unimpoverished, having a natural fertility, than one greatly mended and enriched by manure. A.

to my stall-fed oxen, I strew on each acre, after this plowing, five Winchester bushels of ashes, leaving them to be washed in by the first rain. In this manner I let the land lie till I give it the second and last plowing before it is sown. The manure has by this management the desired effect, and the barley generally produces full and heavy ears.

When I sow my barley after turneps, I give the land only two plowings, because the soil was before much loosened by the hoeings bestowed on the turneps; but in other cases I am fond of allowing three, and sometimes four plowings to my lands destined for barley; and I generally find it answer very well; for many years experience has convinced me, that upon a fine tilth barley always thrives best, and yields most: in fact, the crop is almost always governed by the condition of the land, and a well-tilled soil is less exposed to danger in an untoward season.

Peat-ashes approach, in their effects on the several crops on which they are laid, to coal-foot; but two-thirds of the quantity that is used of foot, will be sufficient of the ashes, as they are, in a much stronger degree, impregnated with a vegetative power; and they are, besides, in most places, easier procured in quantities, and at a cheaper rate.

It may possibly be objected, that this manure requires great nicety in the application: I allow it does; yet every intelligent farmer *, who knows the nature and qualities of the soils of his several fields, will soon be able, with great precision, to judge how much he ought to lay on each acre: his chief care at first should be not to overdo it; for therein consists the principal danger; though, after all, these ashes will, at the worst, unless laid on in very great excess indeed, only occasion the inexperienced farmer the perhaps partial loss of a single crop; for the succeeding year they will, in all probability, have a very salutary effect on the land, and sometimes even repay the preceding loss.

When the error is in the excess, it is very easy for a farmer to avoid falling into it; for, independent of every other con-

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sideration,

* It should seem, the farmer ought to use this manure at first with great caution, till repeated experiments have made him well acquainted with the nature and condition of his land. O.

sideration, the sole view of lessening his expences will, it is imagined, sufficiently induce him to be attentive to this particular.

When peat is burnt for the sake of its ashes in summer time, it is necessary that some care should be taken to defend them from the too powerful influence of the sun, air, dews, rains, &c. or great part of their virtue would be exhaled and exhausted. If the quantity of ashes procured is not very great, they may be easily put under cover in a barn, cart-lodge or hovel; but large quantities must necessarily, to avoid expence, be kept abroad; and when this is the case, they should be ordered as follows.

A dry spot of ground must be chosen; and on this the ashes are to be laid in a large heap, as near as possible in the form of a cone standing on its base, the top as sharp pointed as possible: when this is done, let the whole be covered thinly over with a coat of soil, to defend the heap from the weather: the circumjacent earth, provided it is not too light and crumbly, will always serve for this purpose.

When thus guarded, the heap may very safely be left till January or February, when it is in general the season for spreading it: but, before it is used, it is always best to sift the ashes, that the cinders, stones, and half burnt turf, may be separated from them.

This may, perchance, by many be esteemed an unnecessary trouble; but experience, which is the best guide, has convinced me, that by this means I can better ascertain the quantity that ought to be sown on the several sorts of land; for the small powdered ashes, being equal in quality, are of course equal in effect; whereas, when there has been any other mixture with them, the effect has often been greater or less than I could have wished. Thus, when I mentioned the number of bushels I strew on an acre, it is always to be understood of sifted ashes: should any farmer be inclined to try them rough as they are first produced after burning, the quantity to be allowed for an acre must be more in proportion to the mixture of other matter that is in them*.

These

* The method of using them sifted is certainly much to be preferred, as they must be more certain and equal in their operation.

These peat-ashes are almost, as I have already observed, a general manure suited to every soil. On cold clay they warm the too compact particles, dispose it to ferment, crumble, and of course fertilize, and, in fine, not only assist it in disclosing and dispensing its great vegetative powers, but also bring to its aid a considerable proportion of ready-prepared aliment for plants.

On light lands these ashes have a different effect: here the pores are too large to be affected, or farther separated by the salts or sulphur contained in them; but, being closely attached to the surfaces of the large particles, of which this earth is generally composed, this manure disposes them, by means of its salts, to attract the moisture contained in the air: by this operation, the plants which grow on these porous soils, are prevented from being scorched up and burnt; and if they want, which they generally do, more nourishment than the land is of itself capable of affording, this is readily and abundantly supplied by this useful manure.

In large farms it is very usual to see all the home-fields rich and well-mended by the yard-dung, &c. whereas the more distant lands are generally poor, impoverished, and out of heart, for want of proper manure being applied in time.

Whilst the farmers depend almost entirely on their yard-dung, this cannot fail being the case; for dung is of very heavy carriage: they are willing, therefore, to drop it as near home as possible, being in this way able to do a great deal more work in the same space of time: but would they once try the virtue of peat-ashes, all their lands might be alike improved, though at a very considerable distance from the home-stall; for so few of them are required, and they are so light of carriage, that a single tumbril will hold as many as ought, in most cases, to be laid on two acres of land; by which means, when these ashes are used as a dressing for the distant fields, it costs the farmer less
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If the farmer is inclined to use the coarse parts that are separated in the sifting, let him lay them separately on some of his stiff land that is in fallow, where they may be of some service. N.

in carriage than does that of the stable-dung for his home-fields.

You may, perhaps, imagine I have said too much in commendation of peat-ashes as a manure ; but be assured it is all warranted by experience * : if, however, you still think it too much, ascribe it to the prolixity of old age : I am sure you will pardon me, when I inform you, that it is chiefly to the fertilizing quality of these ashes I owe the ease I now enjoy. A journey to this metropolis gave me an opportunity of seeing your first publication, and of writing you this letter.

I am, GENTLEMEN,

London, Oct. 21, 1763.

Your humble servant,

An Old WEST-COUNTRY FARMER.

NUMBER LII.

A Letter to the Editors, from a Member of the Society, relative to some Experiments made by Mr. Rocque, in the Culture of the Burnet and Timothy Grass, as artificial Pastures, to serve as Winter-Fodder for Cattle.

GENTLEMEN,

I Own I think the world in general, as well as the Society in particular, is greatly obliged to Mr. Rocque of Walham-Green, for his long-continued attention to the improvement of agriculture in its several branches ; and this obligation is of late greatly encreased, by the constant endeavours he has used, for some years past, to bring about a reformation in our meadow and pasture grounds.

The lands, dedicated to the purpose of providing our cattle with a store of fodder, have been hitherto over-run with weeds, and useless, if not noxious, plants ; for when a field is to be laid down in natural grass, the usual way is to leave it entirely to nature : the consequence of this is, that it is generally several years before the land is completely coated

* We should be glad to hear from this gentleman on some future occasion. N. Q.

coated with grass, and when it is covered, perhaps half the number of the plants that grow on it had better be away *.

It is not to be doubted, but we have in England many sorts of grasses, which are well adapted to the climate, are wholesome food for cattle, and with the help of proper culture would be a very advantageous crop for the farmer and grazier. England has many years been sensible of the great advantages that result from the culture of saint-foin: in some soils lucern has been sowed with considerable profit, and the Dutch trefoil is known to be excellent when properly managed. But these only serve as green fodder in summer: they may, it is true, be dried and made into hay, and in that form be reserved for the cattle's food in winter; but this, independent of the inconvenience, trouble, and uncertainty, that attend the process of making it and keeping it from damage, is not sufficient; the farmer has also occasion for green fodder in the winter, and early in the spring, and that on many accounts, particularly for feeding such of his ewes as will year early in the year, as well as for keeping them from pitching † after they have dropped their lambs.

It is necessary therefore to find some plant that will not only live through the winter, but that will also, if possible, vegetate in that season. Both these properties have lately been found in the burnet; it not only preserves its verdure during the hardest frosts of our winters, but also encreases in bulk, and grows, if the weather is at all open and mild.

This plant has hitherto been esteemed a troublesome weed in some places, but it is of late years only that it has been at all cultivated. If I am rightly informed, the late Mr. Wyche entertained the first idea of its being worthy of cultivation as a fodder for cattle, &c. Mr. Rocque has for two or three years past, at the recommendation of Mr. Wyche, sown several

* It is very certain that the methods of husbandry, generally pursued with respect to our meadows, want great improvement; many meadows, that now let for seven or eight shillings an acre, might, with very little trouble or expence, be made worth at least forty shillings. N.

† Losing flesh, a West-country expression.

several acres of it, and finds it may be mown three times in the summer season. I saw a few days ago, in Mr. Rocque's ground, some burnet that had been cut the latter end of September: it looked very fresh and vigorous, and had acquired a considerable growth since that time.

I also saw in Mr Rocque's barn some hay made of burnet: it was not bad, but would have been excellent had it not been left till the seed was perfected, and had it not been got up in a wet season.

The best time to cut burnet to make it into hay, is just before it begins to flower, as it is then fullest of sap, and tender and nourishing: when the seeds are left to perfect, the stalks are apt to grow sticky, the sap being greatly exhausted in the operation.

I am in great hopes we shall have plenty of burnet growing in a cultivated state in England next year, as I heard Mr. Rocque say, he had sold, if I mistake not, above two hundred bushels of the seed last autumn, for the purpose of sowing for artificial pastures.

Burnet is not only a wholesome food for cattle, but it is also a food which, whether in a green or dry state, most cattle are remarkably fond of: this, as well as its vegetating in the cold winter-months, should induce our farmers to sow it; they would certainly find their advantage in its culture, as there is no fear of its thriving in almost any soil; and it is besides, as may be gathered from what is already said on the subject, a quick grower.

The best time to sow the seed of burnet * is in autumn, about the beginning of September; it will then have acquired strength before the winter, and be in a flourishing state in the spring of the year. It is a hardy plant, yet will it thrive
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* Mr. Miller, in his account of burnet, observes, that it is a very hardy perennial plant, and will thrive almost in any soil and situation. He adds, that they may be propagated either by seeds or parting the roots; if by seeds, that it must be sown in autumn, the seed sown in spring seldom growing the same year. If the roots are to be parted, he says it should be done in autumn, that the separated plants may get good root before the dry weather comes on in the spring.

in proportion to the goodness of the soil, and to the preparation the land has received : if the land is brought to a good tilth, it will come up freer, be quicker in its growth, and by being well rooted will better bear the severity of the winter's frost. The doctrine of cultivating plants, merely to serve as fodder for cattle, is, in some respects, novel; yet is it not on that account less consistent with reason. Every other plant is improved by proper culture; why therefore should not our grasses be as capable of this improvement?

Mr. Rocque has also sown a spot of land with a kind of grass called *Timothy grass* * : this delights in a wet or moist soil, and has a running root like couch grass : the roots of it are very apt to mat together to a considerable thickness, so as to form a coat or skin, that will bear cattle on boggy ground. This then is a great improvement for such kinds of soil, as it will thrive and flourish on them, when perhaps there is scarcely any other sort for grass that can with advantage be sown there. As to the natural grass that grows on bogs, it is in general so coarse and rank, that cattle must be, in a manner, pinched with hunger, before they will meddle with it.

The Timothy grass is not perhaps the sweetest, or the best, that can be cultivated; but it is nevertheless undoubtedly best calculated for lands of the above nature; was it only for its forming with its roots a coat that will bear the weight of heavy cattle, this is an advantage, which it possesses, in the before-mentioned case, above any other grass.

When the Timothy grass is sown on bogs, or soft poachy marshes, this matting of the roots is, doubtless, as I have observed, a great advantage; but this, as well as its shooting freely from every joint of the root, is a very good reason

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* It would oblige us much, if any gentleman would take the trouble of giving us a more particular account of the nature and culture of the Timothy grass. A short piece on the subject, from Mr. Rocque, would be conferring on the public, as well as us, a lasting obligation. E.

why it should be secluded entirely from our upland pastures, which are sometimes broke up and brought into tillage ; for it is as difficult to clear land of the roots of this grass, as it is of those of the couch grass, which are known by every farmer to be extremely difficult to get rid of. But it is not for these upland pastures that the Timothy grass is recommended : let it be confined to wet, swampy lands, that are not in their nature too poor, and every reasonable advantage will be found to result from the sowing it.

It was in September last, if I am rightly informed, that Mr. Rocque sowed his Timothy grass-feed, and when I saw it a few days ago, it was in a thriving flourishing condition*. The land on which it grows is swampy, soft, spongy, and black, and seems to be tolerably rich.

This same Mr. Rocque has several other sorts of grass-feeds, on which he is making experiments ; but, as I am not properly informed of their nature and qualities, I shall not enlarge on the subject, lest I should mislead, instead of informing the judgment.

Before I conclude, I must say a word or two on the excellent method in which Mr. Rocque manages his little vineyard : his vine-props cost him but little, and his pruning chiefly consists in keeping them near the ground, as by that means the fruit ripens the better : he is indeed no friend to the pruning-knife, many fine bearing trees having been, he says, entirely ruined by too much cutting.

Adieu, Gentlemen, and believe me a well-wisher to your work.

A MEMBER of the SOCIETY.

Fulham, Nov. 15, 1763.

* See what Mr. Rocque says of this Timothy grass in the piece marked Number LXXI. page 308, where he also mentions the sheep's fescue grass, most excellent pasture for sheep. E.

NUMBER LIII.

A Letter to the Editors, recommending Mons. de L'Isle's Scythe for mowing Wheat, with the Reasons why the Hainault Scythe only succeeded in the Trials that were made last Harvest in Northamptonshire.

GENTLEMEN,

IN the late trials made of some scythes, for mowing wheat, in this county, only that from Hainault succeeded; and this, indeed, on reflection, is not much to be wondered at.

The person to whom the trying these experiments was entrusted by the Society of arts, was one Mons. Roland Charles de Breux: he is intelligent and communicative, but knew how to make use of the Hainault scythe only: as to the other two, which were sent down by the Society, he did not pretend to know any thing about them.

In a piece (marked No. IV.) in your collection, I find described the manner of mowing wheat with a scythe, invented by Mons. de L'Isle, and recommended by Mons. du Hamel in his Elements of Agriculture lately published in France. Had our Northamptonshire mowers known how to use this scythe, they would probably have found it answer better than that so strongly recommended by Mons. Roland.

We have, in England, mowers who are very capable of using this instrument of husbandry in a proper manner; that is, of mowing the wheat towards the wheat*; and we need send no farther than the vale of Aylesbury to procure them.

In the stiff strong soil of this vale they annually sow a great many acres in horse-beans, all which they usually mow with a bare scythe, *in swarth*, as they term it; that

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* See page 20, of our collection.

is, they mow the beans towards the beans; and each mower has a boy * to follow him with a fork to lay them in wads: their reason for mowing them *in swarth* is on account of the largeness of their crops, and the beans leaning inwards: it is only when they chance to have a thin crop, that they venture to mow them against their bending (this they call *throating*); for should they do it in common, it would break the hearts of their mowers, being as hard work again as the other.

When they mow in swarth, the workmen always keep the points of their scythes downwards, or they would strip off great quantities of the beans.

In Hertfordshire also, some farmers mow their beans with the scythe, and a three-ribbed strong cradle: this cuts a great deal in a day, lays the beans in regular rows, and saves the expence of a wadder; but in Buckinghamshire they cannot use a cradle, their crops being in general so heavy, that the workmen could not carry over the swarth.

You must perceive that there is a great analogy † betwixt the Aylesbury way of mowing beans and Mons. de L'Isle's method of mowing wheat: both workmen mow inwards towards the standing corn; both of them have gatherers to collect the corn, and lay it in wads or gavels; and both work where there is a heavy crop: but Mons. de L'Isle's workman cuts the wheat against the bending, or, as an Aylesbury-vale man would say, *throats* it; whereas the beans are cut with the bending. The reason of this difference seems plain: the beans are cut with the bending, because the swarth is heavy, and the stalks are generally tender and green enough to yield easily to the edge of the scythe; whereas the wheat is not so heavy, but it is easily carried over by the scythe, and the straw of it is so dry, hard, and glassy, that if it was not mowed against the bending, the edge of the scythe would be apt to slip up, the

* A gatherer follows each mower in Mons. de L'Isle's method of mowing wheat. See page 20, of this work.

† See the piece before referred to, *passim*.

the stubble would be left long, and many of the ears entirely uncut. This will easily be comprehended, if your readers will take the trouble of turning to No. IV. of your collection, where, as I have already observed, Monf. de L'Isle's method of mowing is described.

In the plate, which you gave of the scythes, fig. 1. is the handle, or mounting, of Monf. de L'Isle's scythe, where, at the letter *d*, may be seen the two olier twigs that are substituted in the stead of a cradle: figure 2. is the blade to it, being six inches shorter than the blade of the common scythe, or thereabout. This I mention for the satisfaction of such as are curious in matters that relate to agriculture.

In the trials that are to be made next year, I would therefore, by all means, advise the Society to let Monf. de L'Isle's scythe be used in mowing wheat, by some of the Aylesbury workmen, when there will be no doubt of its answering every thing that has been said of it; and it would sooner come into use than the Hainault scythe, as differing less from that commonly made use of; besides, there is no doubt but that in the hands of English workmen it would soon be greatly improved.

Northampton,
Nov. 24, 1763.

Your very humble servant,
A. B.

NUMBER LIV.

A Letter to the Editors, on the Culture of Cole-Seed.

GENTLEMEN,

THE county I live in making many woollen goods, a great quantity of rape-oil is annually expended in that manufactory. This, together with the natural richness of our land, prompts us often to sow the cole-feed, or rape-feed, which thrives extremely well with us.

In

In moist soils we sow it on four-bout lands, the large furrows betwixt the ridges serving to drain off the water.

We do not trust to the richness of our land alone, for we almost always lay on a considerable quantity of manure; being of opinion, that land cannot be in too good heart for this plant, which requires a great deal of nourishment, having a very luxuriant growth; and draining the land much: for this reason it is in vain to attempt sowing it on poor, hungry, dry soils, on which it will never thrive, nor turn to profit.

Land cannot be too mellow, nor too much pulverised, for the cole-seed plant; for it not only requires a rich soil, but also the land must be in excellent tilth: we allow land, on which it is to be sown, sometimes three or four plowings, according to the nature of the soil; if stiff, it requires the more tillage; if a loose, rich, crumbling loam, less plowing will do.

In July we harrow the field over, and afterwards sow on it half a peck of seed broad-cast out of hand. As soon as the plant gets out of its seed-leaf, I hoe it as I do my turneps, thinking this a better way than to let it grow rambling without after culture, as some of my neighbours do.

This crop is, without care, very apt to be destroyed by slugs, whilst the leaf is young and tender; but to prevent this, I always sow over the young plants a mixture of flaked lime and wood-ashes: about ten bushels of flaked lime, and fifteen of the ashes, will be quite sufficient for an acre: this is the quantity I use.

I find great benefit from this practice, as it not only burns up the slug, and destroys many pernicious insects, but also greatly helps forward the crop, insomuch that it gets to a strong head before winter, and yields me plenty of fodder for my cows, sheep, &c.

A part of my ground will sometimes unaccountably fail; that is, the seeds will not come up; but as the cole-seed plant bears transplanting extremely well, I make my men remove

some of the plants, where they stand too thick, to supply the deficiencies : these are sure to take, especially if rain ensues ; if it does not, I cause them to be watered, which is soon done, as they seldom fail in great quantities.

The cole-feed plant is so hardy, that it bears, without injury, the frosts of our severest winters ; but the north-easterly winds, if very cold and piercing, will sometimes greatly injure a crop, and there is no guarding against these.

We sometimes in this county sow cole-feed merely for the sake of the winter-feed it affords for our cattle ; in which case we plow it up early in the spring, and are almost sure of a good crop of sound barley. This is not generally practised, because it requires great care to clear the land of the cole-feed plant, which would otherwise grow up with the barley, and injure it : I, however, and some others, have often practised it to advantage.

One thing I must observe before I conclude, which is, that cattle must be fed with this plant with great care, or it will have fatal effects : it is best to give them with it, at times, sweet dry hay : this corrects the superabundant moisture of the plants, and serves to dry up the uncorrected and raw juices that would otherwise mix with the mass of blood in the cattle : suckling ewes may feed on it heartily however with very little danger ; and, in fact, experience will soon direct the young farmer in the management of his cattle in this respect.

We reap, for the most part, our crops of cole-feed ; and as it is very apt to shed, we prepare frames lined with threshing cloths, each drawn by one horse, to receive the heads of the plants as fast as they are cut off.

When this crop is properly managed, nothing pays better.

I am, GENTLEMEN,

Your very humble servant,

Witham, Essex, Nov. 3, 1763.

S. T.

☞ The above letter is corrected in this third edition, according to the desire of our correspondent, testified in Number LXXXVI. p. 380, which see. O.

NUMBER LV.

*A Letter to the Editors, on the Use of Horn-Shavings as a Manure for Chalky Land **,

GENTLEMEN,

A Part of the farm I occupy is a chalky, brittle, crumbly soil: this I was for some years at a great expence to mend properly, so as to bear me a tolerable crop of wheat; but recollecting, that I could, in my neighbourhood, at no great expence, get plenty of horn-shavings, I resolved to try them; and, indeed, they answered beyond expectation.

After I have brought my land into proper tilth, I sow on each acre about fourteen bushels: on these I sow my wheat, being first steeped and limed, and immediately plow it in.

The virtue of this manure is not speedily exhausted; all the succeeding crops, for four years, are the better for it, and it particularly agrees with light lands.

I have used it to advantage on some light gravels on my farm, which, with hotter manures, are often apt to burn the crops, especially in dry weather: but these shavings, being of a spongy nature, retain the wet, attract the dews, and are, by that means, of infinite service. This is all I have at present leisure to say.

I am, GENTLEMEN,

Your very humble servant,

Kent, Nov. 16, 1763.

R. S.

* Any animal substance whatever, used with discretion, is good manure for land.

Museum Rusticum, &c.

For D E C E M B E R, 1763.

T H E T H I R D E D I T I O N,
Revised and corrected by the EDITORS.

N U M B E R LVI.

*A Letter to the Editors, on the Methods of Mowing Wheat with
the Hainault, and other Scythes.*

GENTLEMEN,

A Correspondent of your work, in a piece marked Number XXXII. and signed *W. H. Farmer*, has obliged the public with an account of some experiments that were made in Northamptonshire the last harvest, in the affair of mowing wheat; to which you have annexed a plate of the parts of the several scythes that were sent down, in order to make these experiments. But after all, I find not, either in your correspondent's letter, or your note, any indication by which the public might be informed which was the Hainault scythe.

You, who are well versed in these matters, might, perhaps, imagine there was no necessity to be so particular in a thing which most people know; but this, in fact, is not the case; for I have, myself, by numbers of people, been asked which was the Hainault scythe in your plate, as it was pretty well known I could resolve this doubt, having been

in Northamptonshire, at the time the experiments were made.

This, Gentlemen, has induced me to dedicate a vacant hour towards the farther explanation of this affair; and I shall begin by observing, for the benefit of your readers, that fig. 5. (in your plate of the scythes, page 160.) is the blade of the Hainault scythe, and fig. 6. is the handle of it.

The blade of this scythe is about half the length of those used in England; nor, indeed, could it well be longer, as it would be then too heavy to use with one hand, which is the method of working with this scythe.

Was the handle of the scythe quite straight, the labour of the wrist would be too great for any workman to endure for any length of time: this then is the occasion of the angle, which begins at *b*, and ends at *c*, and thereby forms the gripe, being the part by which the workman holds the scythe; and there is a leather loop, and sometimes two, to put his finger in, to give him the greater purchase.

The broad part, *c d e*, is a rest for the arm, being hollowed on one side for that purpose; and this rest greatly encreases the power of the workman in mowing, and contributes much to alleviating the fatigue of the operation, which would not otherwise be bearable *.

The hook which the mower carries in his left-hand is to be seen in your plate, marked fig. 7. There is nothing particular in this: it serves to give the corn a proper bend for the scythe, and gather it afterwards into a gavel, before the mower takes another stroke: the mortise at the end is of no other use but to help to carry the scythe on the workman's shoulder, at which times it receives the blade.

The great difference betwixt this scythe and that commonly used, consists not only in its form, but in its being used with one hand only; whereas all other scythes require both the workman's hands to put them in action: whether
this

* This scythe, seems, indeed, very well calculated for the workman's using it with one hand: but we fear it will be a considerable time before our labourers will be persuaded to attempt using it in common. N.

this is an advantage, is difficult to determine; but that it will be a great obstacle to its being brought into use, is certain.

It is well known that farmers and their men hate innovations of all sorts, especially when they are so very different from the methods in use. This will induce them to reject the Hainault scythe: *for who, say they, ever heard of a man mowing with one hand, who has the use of both?*

Under these circumstances, I should imagine, it would be most prudent to bring into use some other scythe, for this purpose of mowing wheat, not so different in form from that used in mowing our barleys; and if I mistake not, one to be found in your plate would do extremely well, as it seems to have all the requisites.

The blade of this scythe, marked fig. 3. is within six inches as long as our common blades, and not unlike them in form. The handle, fig. 4. is a curious invention. At *a* the blade is fixed, at *b* is the short handle for the right-hand, and the crook at the end is to be held in the left-hand.

The advantages of this form cannot but be evident, as by only shifting the left-hand from one part of the crook to the other, the mechanism of the operation is altered, and the edge of the blade is raised or lowered at the mower's pleasure: it is besides, by this convenience, accommodated to be used by workmen of different heights, though mounted in the same manner for both, which is a thing no other scythe can boast.

Notwithstanding all the advantages possessed by this scythe, it did not meet with success in the trials that were made in Northamptonshire; but this, indeed, is to be ascribed to the person's not knowing how to use them, who was sent down thither by the Society; and if he knew not their use himself, he certainly could not instruct others*.

I i 2

The

* Monf. Roland Charles de Breux, the person employed by the Society in these experiments, did not undertake to instruct the workmen to use any scythe but that from Hainault: if the others, therefore, did not succeed, it was not his fault; they may, perhaps, have greater success next harvest, when they will again be tried with all the necessary precautions. E.

The scythe I am treating of was, if I am not greatly misinformed, invented and first used in Brabant; it answered the expectations that were formed of it, and is, on that account, fit to be adopted in England.

The other scythe delineated on your plate, that is *Monf. de L'Isle's*, which stands recommended by *Monf. du Hamel*, in his *Elements of Agriculture*, is not, I think, so proper for mowing wheat as the Brabant scythe: the straightness of the handle must be an impediment in the working; and it is, besides, unconscionably long.

I would recommend that, at a proper opportunity, the Brabant scythe have a fair trial, and if it was to be worked in the manner recommended by *Monf. de L'Isle* for his scythe, I should imagine it could not fail succeeding.

To compass a proper method of mowing wheat, to be brought into general practice, would be a great acquisition in husbandry, on many accounts, particularly as our harvests would by that means be cut and housed in much less time, and of course less of our corn would every year be damaged by the weather, which is sometimes, at the latter end of the summer, and the beginning of autumn, very wet.

Every method by which the trouble or expence of the works of husbandry can be lessened, must, of course, greatly promote the progress of agriculture: it is the dearness of labour that makes corn dear; and it must of course be cheap, if the farmer can, for half the money he now does, plow, harrow, sow, reap, and mow his crop.

I know it will be urged, that the poor would then want employ, as the farmer would have occasion for fewer hands to do his work; but this is an idle objection, as it is well known, that in our woollen manufactories, in particular, many more hands might be employed, than now apply for work; and if by the encrease of hands the wages were lessened, it would be of benefit to the kingdom, without hurting the poor; for as corn would be much cheaper, they could live better on their lessened wages, than they now can on those that are given. And, moreover, if the

wages were lessened, the consumption and demand would greatly encrease, as the manufacturers could afford to supply the merchants at so cheap a rate, that they would undersell our neighbours the French at the foreign markets; which is not the case at present, owing to the dearness of provisions and labour.

I hope you will take this letter as it is meant, and if you think it has merit sufficient, give it a place in your collection.

I shall perhaps, in future, communicate to you some observations which may not be deemed incurious by your readers. Agriculture has long engaged my attention, and I have from time to time endeavoured to gain every information I could on the subject.

If we would find true happiness, or content, which is much the same thing, we ought probably to search for it among such as pass their lives in rural employments: by these the most active mind is fully occupied, no room being left for tyrant passions, which are, in fact, almost the sole source of our varied misfortunes.

But I forget, that in such a collection I must not run too much into a strain of morality. Pardon me for my little digression, and believe me very much,

GENTLEMEN,

Your humble servant

London, Nov. 25, 1763.

CLERICUS.

NUMBER LVII.

A Letter to the Editors, on the Benefit of watering Land in Dry Summers.

GENTLEMEN,

IF you think the following method of agriculture deserves your notice in the *Museum Rusticum*, a work so well calculated for the improvement of farmers in general; I shall relate the management of a field of five acres, which

which I laid down in grass in the year 1762, which proved a remarkable dry one; many crops of new-sown grass failing through the excessive drought of the season.

It had a summer's tilth the preceding year, to destroy all weeds that might be produced in the former crop, which was wheat *: during the winter it was again plowed, and twice more in the spring: it was intended to have given it another plowing † before it was sowed, to reduce it to a very fine mould, which is always reckoned best for grass: but the rainy weather at that time prevented it, the soil being a strong clay, very retentive of wet for some time.

The land was made as level as possible, and then sowed with white oats, only three bushels ‡ on an acre, contrary to the maxim of this county, where our farmers never sow less than four: this was designed with a view of preserving the grass seeds, consisting of *rye-grass*, *trefoil*, *white Dutch-clover*,

* Our correspondent's plowing this field the preceding summer, to destroy the weeds that might have risen in the wheat-stubble, was certainly very good husbandry, and could not fail answering his expectations: this plowing was, besides, of great service towards reducing the land into a fine tilth. O.

† This gentleman, with great judgment, allowed his field four plowings, and would have given it a fifth before sowing, had not the weather been wet. A little reflection will almost always make the affairs of a farm go well. It should be considered that a strong soil requires, at least, double the plowing that a light sandy one does; yet have we often known slovenly farmers lay down a stiff soil in oats and grass seeds, with only two slight plowings: the consequence has generally been a failure of one or the other, if not both of the crops. To such farmers we recommend our correspondent's practice. O.

‡ Great advantages must, of course, result from sowing but a few oats for seed. Had it been sown thick, the crop of grass would have been either choked or starved; but by this thin sowing, it received, during the spring-months, in its infant-growth, all possible benefit from the dews, air and sun; and afterwards, when the sun's influence grew too powerful, and would have scorched it up, the oats branched and run to head, and, by shading the grass, protected it in its autumnal growth. R.

clover, rib, or plantane-grafs, and hay-seeds *, from being choaked up by too great a crop of corn, which is often the case in wet seasons: the corn, growing rank, is soon laid by the violence of the wind and rain, to the total destruction of the grafs, none being observed to grow where the corn is laid.

The season proving remarkably dry, I took a very particular, and almost, I may say, a singular method of helping my crop to rise in spite of the dry weather, so prejudicial to the grafs.

At all events I fitted a trough, pierced with holes, to a water-cart, that contained sixty gallons, in the same manner as the streets in London are watered in the summer-time; and a pond being contiguous to the field, my servant, with only one horse, watered the ground in five days time, and that only once over, which answered beyond expectation, giving convincing proofs of the utility of the scheme.

In about a fortnight's time, the grain arose to a considerable height, shading and keeping cool the grafs underneath: by harvest-time several of the oat-straws measured from four to five feet in height; and the very next field, sowed with oats and grafs, failed considerably, none of the oats measuring more than two feet, and many under: the crop of grafs was entirely lost, and obliged to be plowed up again in the following winter.

‡ The produce of my field, so managed, was thirty-two quarters † and two bushels of good oats, and would have yielded more, but I was obliged to make the stack in the field,

* Were we to find any fault with this gentleman's proceeding, it would be for sowing in the same field confusedly so many kinds of grafs-seeds. We cannot enough recommend the sowing the best kinds distinctly and separately, cultivating them regularly, as we do our crops of corn. N.

† This was indeed a very good crop, and we join with our correspondent in admitting a great efficacy in his watering. We should, however, have been glad if he had informed us, at what time of the year he watered his field; how many turns of his cart it took to an acre, or, in other words, how many turns his man went in a day: in what manner the field was manured

field, not having barn-room at that time; and the double carriage afterwards to be thrashed (the wind having blown down the stack) contributed greatly to diminish the produce, or it had been larger.

The grass proved very good, and a full crop: almost every other farmer lost their crops of grass that season. I am convinced that watering the ground, which was done in July, the grain being sowed the April before, was the principal cause of so large a produce.

I am, GENTLEMEN,

Your most humble servant,

Nov. 23, 1763.

R. H—E,

In the North of Hertfordshire.

NUMBER LVIII.

*A Letter to the Editors, hinting a Method of preserving the
Madder-Root for Sale, without drying*

GENTLEMEN,

THE hint thrown out in your *Museum*, (No. XXIX. page 147.) in regard to the making an extract of the madder-root, which might serve the purposes of dying, I am apt to think, will be of very little use, upon account of the large quantity of water which must necessarily be used to make, in the first place, a proper decoction of the said root, green, or dry, in order to draw the whole colour from it; which decoction must afterwards be boiled away to the consistence of an extract; and the expence hereof, besides the nicety which is requisite in every operation

manured for the preceding crop of wheat; and whether that grain was sowed on a fallow, or after beans, peas, or any other crop. We should be glad of another letter from this gentleman, explaining these particulars; and his future favours, on any other occasion, will greatly oblige us. N.

ration of this kind, I apprehend, will be too heavy a charge upon the commodity *.

I am much better pleased with what your ingenious correspondent has observed of the use of this root in its green state. *Some ingenious men in France, he says, have tried how it would answer to use the madder-root green, for dying. It did very well.* And I know of no objections that can be made against the use of it this way, if our dyers could possibly receive it from the hands of the planters in this condition, without any danger of its fermenting and putrefying before it could reach them.

To prevent this, I propose, that the roots, as soon as they are taken out of the ground, should be well washed, and immediately thrown under a mill, the construction of which may be easily devised, there to be ground, with what water may be requisite, into a fine pulp; and this pulp afterwards to be put up into tight casks, with a proper quantity † of bay-salt and alum, in equal proportions. These salts, I apprehend, will prevent any fermentation, and consequently any corruption of the materials, without the least injury to their colour: the latter, I have reason to think, will rather improve it.

To try this experiment, a planter has nothing to do but to pound a few green roots very minutely in a marble mortar, with a given quantity of these salts, and afterwards to cover them up close in a stone jar, observing, from time to time, what alteration follows in their colour, and whether any fermentation ensues.

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If

* As in some counties a great deal of coke, or coal-cinders, is consumed, for drying malt; perhaps this extract might be made and evaporated with very little expence, if the furnaces of the coppers were so contrived, as to burn the coal that was used, to a coke or cinder, at the same time that it heated the water, or extract of the root. This is far from being impossible; and once compassed, as the coke would sell for, at least, as much as the coals cost, there could nothing be charged to the account of the madder, but the labour of the men, and the carriage of the coals to and from the laboratory. N.

† Our correspondent apprehends, about an ounce of each to a pound would be sufficient.

If no fermentation follows, he may be assured the root, in this condition, may be sent to any part of the kingdom, and will serve all the purposes of dying, equally with the dried root *; and though the bulk will be considerably increased, and the carriage consequently enhanced, yet, I apprehend, the planter will be enabled to afford it upon terms so much cheaper, that the consumer, in the whole, will be much better served †.

If I could have had any opportunity, myself, of trying this experiment, I should not have rested satisfied with barely sending you my speculative opinion upon the matter ‡: those that have such opportunities, and will send you the result of any trials of this kind, may be of signal service to their country, and among the rest will particularly oblige,

GENTLEMEN,

Manchester, Nov. 24, 1763. Your humble servant,

J. M.

* Could the salt, which was used to preserve the madder in the barrels, be afterwards recovered from the dyer's baths, which one would imagine was not impracticable, it would greatly lessen the price of the root to the consumer, as the same salt, with a little addition in quantity, might be used again for the same purpose; by which means the duty, which is very heavy on salt, might be saved. This may, perhaps, be thought a saving not worth attending to, being only in the proportion of an ounce to a pound; but if it is considered, that of this salted pulp of the root, eight, if not ten pounds, must be used by the dyer, where one of the dried root would be sufficient, it alters the case. N.

† We apprehend the roots of madder, taken green out of the ground, might be preserved any reasonable time, so as to be carried some hundreds of miles if it was necessary, by only packing them up in tight barrels, well hooped, to keep them from the air: another method of preserving them good, and fit for use, upwards of a year, may be seen in a letter in this Volume, marked Number XC. page 400. R.

‡ If this gentleman would continue his favours, it would oblige us much.

NUMBER LIX.

A Letter to the Editors, relative to Mons. de L'Isle's Method of mowing Wheat.

GENTLEMEN,

HAVING seen your *Museum Rusticum*, of which I intend to be a constant reader, on account of the many useful observations already contained in it, I could not help taking notice of a piece, marked No. IV. and entitled, *A Letter, containing Observations on the new Method of mowing Corn, invented by Mons. de L'Isle.*

I am a great lover of agriculture, not less for the pleasure it gives me, than for the profit that naturally results from a proper practice of it.

I should be glad to introduce this method of mowing wheat into my native country *; (you must by this time know I am a foreigner) but I do not find, in the piece above mentioned, any perfect description of the dimensions and proportions of the scythe †, so as to enable me to form a proper idea of it, and put me in a capacity of directing workmen how to make one.

I should be glad to be informed where I can find a perfect description of this scythe, together with ample instructions how to use it ‡. If it should succeed in the trials, I

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* We have taken the liberty of altering, in some respects, the form of this letter, but our correspondent's thoughts are all preserved. N.

† Figures 1 and 2, in our plate, page 160, are the handle and blade of Mons. de L'Isle's scythe; the dimensions and proportions of it are contained in the note under page 160: we refer our correspondent also to Number LIII. page 235, of our collection, and to Number LVI. page 241: these pieces he will not, probably, be displeased with reading, if he has not already seen some of them. N.

‡ Mons. de L'Isle's scythe is greatly recommended by Mons. du Hamel, in his *Elemens d'Agriculture*, lately published in France:

purpose making with it in my country, I will certainly communicate it to you, as well as any other observations in husbandry, which I may think worthy of appearing in your collection.

I should also be glad to be informed, whether the inventor of this scythe was Edward Lisle, Esq; * who wrote the Observations in Husbandry, being led to this imagination by the affinity, if not the identity, of the names. Your giving me the information above required, will very much oblige,

GENTLEMEN,

London, Nov. 4, 1763.

Your very humble servant,

A FOREIGN FARMER.

NUMBER LX.

A Letter to the Editors, on the Culture of the Liquorice Plant.

GENTLEMEN,

THE subject of this letter being apparently useful, I hope you will give it a place in your work.

I have, in my time, raised a good deal of liquorice: it may therefore be presumed, I know something of its culture. This knowledge, acquired by long experience, I am willing to communicate, at least in part, for the benefit of others, being sensible there is a sale for much larger quantities of this root, than are annually raised in this kingdom.

The

France: it was tried there, long before it was even heard of in England. Mons. du Hamel's account, though not quite satisfactory, will still be proper for our correspondent to read. R.

* After what has been said in the preceding notes, it is scarcely necessary to observe, that the Edward Lisle, Esq; mentioned by our correspondent, is not the inventor of the scythe in question. This gentleman's future favours will be very acceptable. N.

The common culture of it is not difficult to be learned ; and this, with an attention to some of the observations I shall hereafter make, will enable any thinking farmer, that knows his business, to cultivate it to advantage.

This plant thrives best on a deep, loose, rich mould* ; and if it is fresh land, that has not for many years borne corn, the profit will be the greater, as the crop will be larger, and the roots of a finer quality.

A rich sandy soil, provided it is deep, will do well for this plant ; and it must always be remembered, that too much moisture is its greatest enemy : let no one therefore attempt to plant it on a damp clay, lest the whole crop be cankered.

Land cannot be made too fine, nor dug too deep, for liquorice : it should be, at least, moved with the spade to the depth of two feet and a half, and if a little deeper, so much the better.

If the land, on which the liquorice-sets are to be planted, is fresh, rich, and in good heart, it needs no manure for the first crop ; but if it has been for some years in tillage, the planter will do well to give it, in the summer time, a good dressing of very rotten dung, lime, and coal-ashes or foot, mixed together, some months before, in a compost : the quantity must be regulated by the state of the land, always remembering that this plant requires a great deal of nourishment, and is a great impoverisher of land, though it extracts much of its nourishment, or food, from a considerable depth, at a distance from the surface ; some of the roots running five or six feet, at least, into the ground.

When the ground is properly prepared, reduced to a very fine tilth, and laid level, some liquorice runners, or sets, are to be procured. These must be cut into pieces, about eight or nine inches long each †, and planted in rows, with
dib-

* Mr Miller says, it delights in a rich, light, sandy soil, which should be three feet deep at least.

† Ten inches long each, Miller says, with each a good bud, or eye, or they are apt to miscarry.

dibbers armed with iron points. I make my rows two feet afunder, put my sets fifteen inches from each other *, and when three rows are planted on a six-foot bed, I allow two feet more of interval betwixt bed and bed.

When I put in my sets with the dibber, I leave the upper end of each set just level with the surface of the ground: I should have observed, that I have all my sets carefully inspected before they are carried into the field, to see that each of them has one, if not two eyes, or buds, without which they would make no shoots.

When the whole spot of ground is planted, I make my labourers dig up the intervals one spit deep, and spread the earth on the beds: this raises them about two inches above the head of the sets, and by lowering the intervals, serves in wet seasons to drain the beds. I generally contrive to get this work done by the last week in September †; but in favourable years, the middle of October is not too late.

If the weather proves mild, I have no farther trouble with them during the winter; but if it is likely to freeze hard, I cover the beds with peas haulm, or long dung, or some such matter, to forward the growth of the roots in the spring, and protect them, during the winter, from the frosts.

Early in the spring, on the first appearance of the weeds, I allow my liquorice a thorough hoeing; and this is several times repeated in the dry weather of the summer.

The winter following, I again cover them with long dung, and in the spring, before the roots begin to shoot, I have the spaces betwixt the rows on the beds loosened with a spade, and the intervals are well dug: immediately
after

* Our correspondent agrees pretty well with Mr. Miller, as to the distance at which the sets are to be planted, both in the rows, and one row from the other.

† Miller says, that the best season for planting these sets is, towards the end of February, or the beginning of March; but we are rather inclined to join in opinion with our correspondent, and prefer the autumn for this work, particularly if the sets are, during the winter, guarded by some long dung from the hard frosts. N.

after which, I give the land a slight dressing of coal-foot, sown by hand: it should be thick enough to make the land look black: this the first rains wash in, and it greatly warms and invigorates the plants.

The second and third summers, all I have to do, is to keep my crop clear of weeds: this, indeed, is very necessary, and the hoeings for this purpose must be more or less frequent, according to the season; generally, three times in the summer are quite sufficient, especially if the land was well prepared before the sets were planted.

Many good sensible farmers, whom I have known to cultivate this plant, in autumn have a practice of cutting down the stalks, whilst they are in full sap, thinking thereby to strengthen the roots. I differ from them, however, in opinion, and am rather apt to imagine, that this cutting of the stalks, whilst the sap is in motion, must be prejudicial to the roots. It is, therefore, my custom, always to defer cutting off the stalks, till they are withered, and begin to decay; nature then indicating, that an abstraction will be of service.

These roots should have three summers growth * before they are fit to take up: it is very seldom that they have attained a proper size at two years end; and if you leave them longer than three years in the ground, the roots are apt to grow sticky, and lose a part of their saccharine quality.

I never take them up till the sap is entirely at rest, and the leaves and stalks are withered: they are then in prime order, and fittest for sale.

If

* Mr. Miller says, these plants should remain three years from the time of planting, when they will be fit to take up. As he is an advocate for spring-planting, we must necessarily conclude, he thinks they should also be taken up in the spring: yet this does not seem to be the case; for he adds, that they should not be taken up till the stalks are perfectly decayed: now the time when the stalks decay is, undoubtedly, the autumn: we could therefore wish, for the satisfaction of his readers, he had been precise as to the time in which he thinks they ought to be taken up. N.

If these roots are taken up while the sap is in motion, either early in the autumn, or late in the spring, they are apt to shrivel, and lose much of their weight, and are, besides, more disposed to ferment, and perish.

The best way of taking them up is, to dig the ground over as deep as the principal roots run, having pickers ready to gather up the roots as fast as they are thrown up by the spade.

My general practice is to get rid of my roots as soon as I conveniently can; and I find it better so to do, than to wait for the rising of the markets. I have had, from one acre of fine, fresh, rich land, above 3000 pounds of saleable root, which has produced me above sixty pounds; but this many years ago, my crops not being in general now so large.

When I have taken up a crop of this root, if it was planted on fresh land, I generally prepare the same ground to yield me another crop; and this takes me near a year.

I, in the first place, give it, during the winter frosts, a thorough good dressing of well-rotted dung, mixed with lime: of this I lay on large quantities, still having regard to the condition of the soil, and plowing it well in the ensuing summer.

In such loose soils, as are proper for this plant, there is no occasion to dig the land for this crop, the taking up the roots having stirred it to a great depth: this, with three or four summers plowings, is sufficient.

As to the rest, I manage the same as I did for the preceding crop.

If the land, which has borne me a crop of liquorice-root, was not fresh land when it was planted, but had been any time in tillage, I scarcely ever chuse to plant it again with the same crop, without allowing several years of interval*,
at

* This practice of our correspondent we esteem very judicious, though many liquorice-planters in Yorkshire and Surry make no scruple of taking three or four successive crops of this root off the same land. By this means their profit is greatly lessened, and it discourages others from attempting its culture. N.

at least seven ; but in this case, I frequently sow oats in the spring, to abate the rankness of the soil ; and it will then, with a very slight dressing, give me a good crop of wheat.

In my method of cultivating this plant, I always allow space enough for the roots to extend in search of food ; and this is my reason for planting my rows at two feet distance : I am, besides, very careful of keeping them clear of weeds, and that, particularly, during the first summer ; being very sensible that, without this precaution, they would be in great danger of being choaked up, and robbed of their proper share of nourishment ; particularly, they would receive no benefit from the dews, which are so friendly to vegetation ; and even the sun's warmth would be, in a great measure, kept from the roots by the shade of the weeds.

Many, who plant liquorice, allow much less space than I do betwixt the rows, and will yet, the first summer, take off a crop of onions, or spinage, or young carrots, and think it so much clear profit ; but the question is, whether these crops may not, during the time they are on the ground, be, to all intents and purposes, deemed weeds, having nearly, if not altogether, as bad effects, as weeds would have if permitted to grow with the crop *.

Some, worse farmers, continue this practice two years of its growth ; but it is quite needless to condemn this method of culture, as it cannot but stand self-condemned.

In the dressings I give my land, for preparing it to receive this plant, experience has convinced me that lime is a much sweeter manure than stable-dung : in fact, this last is not, on any account, to be used till it is quite rotten, and then lime is very properly added to it as a corrector.

Some friends of mine, who live very near London, have attempted to cultivate this plant on their lands ; but they

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L I

find

* Mr. Miller thinks a crop of onions may, without damage to the roots, be taken the first year : we rather join with our correspondent in thinking, that they would have nearly the effect of so many weeds, and do more damage to the crop than the value of them could possibly pay. N.

find it does not answer ; and this, on account of the great richness of the soil, owing to the great quantity of London dung laid on it. It is true, the roots were at three years end larger than mine; but they were not so bright, but had a blacker coat, and were deemed greatly inferior in quality *.

Should any of your readers be inclined to cultivate this plant, by following these directions, not implicitly, but according to their discretion, the circumstances of their soil, &c. considered, they cannot well fail succeeding.

I am, GENTLEMEN,

Your most obedient servant,

Croydon, Nov. 26, 1763.

G. K.

NUMBER LXI.

A Letter to the Editors, recommending the Use of a Cutting-Box, for preparing Horse-Meat.

GENTLEMEN,

I HAVE travelled over several parts of England, and have, of course, seen many methods practised in feeding plow and cart horses.

Some half starve them by not allowing a sufficiency of corn; others, on the contrary, have their horses too well fed, when they leave this business to the discretion of their plowmen, who most of them think a horse cannot, if he works, have too much corn. Both these extremes should, if possible, be avoided ; yet it is no easy matter to do it.

I, for my part, never give my horses any pure corn, but always make use of a cutting-box : in this my men cut their horse-meat, which is unthreshed oats, tares, peas, or beans: they cut off the heads where the corn lies, and, besides, take a cut or two of the straw to mix with it.

This

* Mr. Miller says nearly the same thing of the lands near London.

This my horses eat instead of corn, and they are very fond of it, it being very nourishing food; and there is no danger of their being surfeited with it, which they often are with pure corn, many of their disorders arising from their being over fed.

As I think it a great pity that this method of feeding horses should not be adopted in other parts of England, I herewith inclosed you a sketch of the cutting-box, to be engraved for your work; by which your readers may soon have others made, as a workman will at first sight conceive the form of it, from the drawing I send you; and it is afterwards easily made, even by an indifferent hand *.

a, is the box wherein the sheaves of oats, peas, &c. are laid to be cut; *b b*, an iron plate with which the mouth of the box is lined: *c*, is the cutting-knife; *d*, a rest for it when not in use: *f*, is the sweep, whereby the cutter plays up and down when in use, and has by that means the greater purchase and power. As to the rest of the form of it, the legs, &c. the plate will sufficiently direct the workman.

I cannot enough commend the use of this cutting-box, though I am persuaded the plowmen will endeavour to prepossess their masters against it, because the cutting of the horse-meat is pretty tough work, and they do not, in general, love to do more than they can help.

When oats, beans, peas, or tares, are intended to be thus cut for horse-meat, it is best to mow them before they are quite ripe, as by that means fewer of them will be lost by shaling, and the straw, or stalks, will be of better quality, and more nourishing for the cattle.

Care must be taken that the crop be well dried before it is housed, or, as it is cut when it is in sap, it may heat in the mow, and take great damage, if not set the barn or stack on fire.

I have only to observe, that this horse-meat should be cut fresh and fresh, as the cattle want it, or by being ex-

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posed

* See fig. 1. plate 2.

posed to the air, it will harden and become disagreeable to their palates, and this will cause them to nauseate their necessary food. I am,

GENTLEMEN,

Canterbury,
Nov. 30, 1763.

Your humble servant,
A FRIEND to your WORK.

NUMBER LXII.

A Letter to the Editors, on the Culture of Horse-Beans in the Island of Thanet, and the Use of the Shim, or Kentish Horse-Hoe.

GENTLEMEN,

I BELIEVE I have already informed you, that the farmers in this island are an intelligent, sensible, set of men; they are not slaves to old customs, but are always willing to improve their methods of husbandry, by adopting such new practices as are in other places warranted, by experience, to be good.

To this may we, with great justice, ascribe the delightful appearance the face of the country in this neighbourhood wears: the beauty of nature, in itself so charming, is greatly set off by the ornaments of agriculture: a pleasing varied scene entertains the eye, whilst the understanding is employed in meditating on the great advantages that result from honest industry.

It is not a great number of years since the farmers in these parts have known the use of horse-beans in husbandry; they are now, however, fully sensible of the many advantages that result from the culture of them, well knowing that nothing prepares land better for wheat; the tillage they require whilst growing, being of great service towards killing the weeds, and separating the particles of earth, so as to reduce them to a fine mould.

I must do this justice to the farmers of Thanet, to say that their method of cultivating beans is the most perfect of any I have ever seen. Was Mr. Tull living, he would
undoubt-

undoubtedly be delighted to see them following, almost literally, his instructions: the spirit of them, at least, they have entirely adopted; and this you will confess, when I describe to you their usages.

The land they intend for horse-beans, they generally plow as soon as the wheat-season is over, perhaps about the beginning of December. At this time some of the occupiers of the richer lands lay on their dung, in order to fit them for a wheat tilth: others do not lay on their dung till the beans are off, in which case they generally make a maxhill * on some corner of the land: under this, if they can procure it, they lay some rich mould, and they always contrive to turn it once, if not twice, in the summer, that the dung may be perfectly and regularly rotted †: by this management it is at hand to lay on the land immediately after harvest.

After the land has got the plowing above mentioned in the beginning of December, they let it lie quiet till about the middle of March, when they give it another plowing; after which they furrow the land, as they call it; that is, they draw furrows over the whole field, at about the distance of two feet and a half one from the other.

In these furrows the beans are dropped singly, by women who are accustomed to the work, and do it very well; but if they cannot get women enough, a seeds-man carries them in a box, and sprains them thinly out of his hand as he walks by the side of the furrow: the whole is then harrowed over, and in this manner the sowing is finished.

By thus sowing their beans in rows, with intervals, they have an opportunity of always keeping their land clear of weeds, and of giving the beans, whilst growing, fresh supplies

* *i. e.* a dung-heap.

† Dunghills should be frequently turned, during the summer season, not only to make them rot equally, but also to destroy the weeds that are apt to grow on them; for, if these weeds are suffered to perfect their seeds, they will shed them on the dung, which will then of course do more hurt than good to the land, by stocking it with a variety of weeds, very difficult to be extirpated. O.

plies of nourishment by frequent tillage. Such weeds as grow among the beans, in the rows, are pulled up by hand: as to the weeds that grow in the intervals, they have a much more expeditious way of getting rid of them; and this they effect by means of a *shim*, or brake-plow, drawn by one horse, with which a man, and a little boy for a driver, will clear of weeds, two acres, or two acres and a half, in a day. They sometimes use two of these *shims* together, when a man or boy goes between the horses to guide them. In this manner a great deal of work may be done in a short space of time.

The *shim* consists of a frame of wood, in the two side-pieces of which are mortises to admit the cheeks of the share, which have holes in them to be raised, or lowered, by means of iron pins, at pleasure. I have herewith sent you a drawing of this *shim*, by which the form of it may be much easier comprehended, than by any description I can give in writing *.

A A, are the billets to which the horses traces are fastened: B B, is the iron share, something like a hoe, generally broad enough to clear an interval at twice: c c, are two iron pins, which are put through the holes in the cheeks of the share, to raise it higher, or let it down lower.

This then is the instrument they use to keep their beans clear of weeds: it is a kind of horse-hoe, or cultivator, very simple in its construction, yet of infinite use. At the same time that it cuts up the weeds, it loosens the earth about the roots of the plants, and gives them every hoeing a fresh supply of wholesome food.

To this may we ascribe the flourishing state of the bean-crops in this neighbourhood: the plants have room to spread their roots, and branch in their stalks; they enjoy all the benefit they can receive from the influence of the sun and air; and by means of the intervals, they enjoy a frequent and repeated tillage during their growth. Horse-beans, in general, love a stiff soil; but by mere dint of good husbandry, these farmers get large crops of beans, on
land

* See fig. 2. plate 2.

land which a common observer would not think capable of bearing scarcely any at all.

When the beans are full podded and ripe, which may easily be known by their appearance, the better sort of farmers cut or reap them in a manner almost peculiar to this part of the kingdom.

The workman has in his left hand a hook of iron, called a *hink* *, having a wooden handle like a sickle, or reaping-hook: with this they gather the beans together, which they afterwards immediately cut with an instrument called a *twibil* †, which they have in their right hand. In this manner they dispatch a great deal of work in a day.

Some farmers pull the beans up by the roots; but this is when the crop happens to be but thin.

When the beans are either cut or pulled, they let them lie in rows on the ground till they are dry, when they bind them up in bundles, with bonds made of wheat-straw; the ears of which have been previously threshed.

Of the *hink* and *twibil* I have also sent you a drawing, by which your readers may readily conceive a proper idea of their use ‡.

What I have said, respecting the culture of horse-beans in Thanet, may possibly induce your readers to entertain a favourable opinion of the principles of the new husbandry, to which it very nearly approaches: in fact, there seems to be no difference, except that the seed is not sown out of a drill-box, which would be, perhaps, a more regular way of doing it, as well as less expensive, than to have women drop the beans in the furrows. I am,

GENTLEMEN,

Margate, Nov. 15, 1763.

Your most humble servant,

RUSTICUS.

* See fig. 3. plate 2.

† See fig. 4. plate 2.

‡ The regularity with which these beans are sown, makes it much easier to cut them with the *twibil* and *hink*, than if they were sown at random. Upon the whole, we cannot enough recommend this method of cultivating either horse-beans, or broad beans. O.

NUMBER LXIII.

*A Letter to the Editors, from a Member of the Society, on the Mechanism of Mowing with the Hainault Scythe, and the most probable Means of bringing it into common Use, together with Hints towards establishing Societies of Agriculture in various Parts of the Kingdom *.*

GENTLEMEN,

AS a member of the Society of arts, I have had an opportunity of inspecting carefully the scythes that were last harvest sent down into Northamptonshire, to be tried in mowing wheat.

The Hainault scythe alone is said to have succeeded in these trials: as to the other two, they are not taken the least notice of in the certificate that was sent to the Society relative to this affair.

On examining these scythes, that invented by Mons. de L'Isle, fig. 1, and 2. of your plate, page 160, more particularly attracted my attention, as resembling most our common scythes in form. This, Mons. du Hamel says, has succeeded in some experiments that have been made with it lately in France; but I own I think the straightness of the handle is an objection: in this, however, I may be mistaken. As to the rest, I should not imagine it any very difficult matter to bring it into use; especially as a very ingenious correspondent of yours tells the world, in a piece marked Numb. LIII. that they mow beans, in the vale of Aylesbury, in the same manner Mons. de L'Isle recommends his wheat to be mowed: these workmen, then, would soon be perfect, with a very little instruction, in this way of mowing wheat.

The next scythe, fig. 3, and 4. in the above plate, seems very well calculated to be useful; but whether it is particularly so in mowing wheat, I own myself at present not a com-

* For this letter the public is obliged to the same gentleman who favoured us with No. XXIX.

competent judge: I shall, therefore, forbear saying more on the subject, leaving it to be handled at large by some of your intelligent correspondents.

I now come to the Hainault scythe, which took me up a considerable space of time to inspect: and this as well on account of its very extraordinary form, as the wonders that were told of its performances, even in the hands of common reapers.

This scythe is in your plate above mentioned, represented by the fig. 5, and 6; and fig. 7. is the hook that is used with it: this hook the mower carries in his left hand, in order to favour the stroke of the scythe. The blade of the scythe, fig. 5. is but short, and, of course, makes the instrument the lighter; the handle is very well adapted to its being used with one hand, the rest, or shoulder, *c d e*, being of great service.

This instrument is, I say, upon the whole, very well adapted to the purpose for which it is intended; but the mechanism of mowing with it, is so very different from that in use with the common scythe, and even from the motion or operation of the sickle, or hook, that it will not speedily be brought into use by merely putting it into the hands of the workmen; and even trying to instruct them in the manner of mowing with it will answer very little purpose.

The writer of the piece signed A. B. above referred to, and marked No. LIII. has very judiciously pointed out to the public an easy method of bringing Mons. de L'Isle's scythe into use, by putting it into the hands of the Aylesbury-vale men, who would soon be expert at mowing with it, as they now mow their beans *in swarth* *.

If I mistake not, I can also put the public, the gentlemen of Northamptonshire in particular, into a way of bringing the Hainault scythe into perfect use, without having their servants and labourers murmur at being half killed with work they are not accustomed to.

I had some months ago, towards the end of harvest, occasion to make a journey into Kent, where I saw some men

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getting

* See No. LIII. *passim*.

getting down a field that had a full crop of beans. Their manner of working immediately attracted my attention, for they did not pull them up by the roots, neither did they cut them with a hook in the common way, as is practised in many counties.

Till I came near them I thought they were cutting with both hands, as each hand held an instrument, and each was in continual motion. I soon, however, discovered the nature of this operation, and found that each labourer had in his right hand a cutting instrument called a *twibil* *, and in his left a sort of a hook called a *hink* † : I have enclosed you a drawing of each, that your readers may, without trouble, immediately conceive the form of them.

With the *hink* they took hold of a parcel of beans, which they afterwards very expertly, and with great expedition, cut with their *twibil*.

The novelty of this manner of cutting beans pleased me greatly, especially as I had ocular demonstration that it was an excellent method.

This determined me to be very particular in my observations, as I intended to introduce the practice in some farms I have in a neighbouring county ; being fully of opinion, that any thing which tends to expedite the works of husbandry cannot but be useful and advantageous to the landholder, and the community in general.

When I returned to town I found the Society deeply engaged in examining the affair of the Hainault scythe, and it immediately struck me, that the Kentish men I had seen cutting the beans would very soon be expert at using this scythe.

Prepossessed with this idea, I examined more and more into the nature of the two operations, and found in the end such an analogy betwixt them, that I could not refrain imparting my thoughts to the public through the channel of your useful work.

The Hainault scythe and the *twibil* are both used by the right hand, and there is no material difference in the stroke
of

* See fig. 4. plate 2. page 262. † See fig. 3. plate 2.

of the two instruments. The hook used with the scythe, and the hink with the twibil, may both be considered as directors and secondary instruments; and the mechanism of motion in each is identically the same. Must it not then appear very plain to your readers, that a Kentish man, who can use the twibil and hink in cutting beans, would very soon, with but little instruction, be expert in the use of the Hainault scythe and its concomitant hook?

For the reasons I have already mentioned, I would earnestly recommend that the Society's agents get, next harvest, some Kentish workmen, that have been used to the twibil, to try what the Hainault scythe is capable of doing. It is not enough for a man to mow half a rood of corn, and from the time he did it in calculate how much may be done in a day.

The way to determine this matter with the necessary precision, will be to have a number of the scythes made, and to let them be wrought with during the whole harvest: it will then be seen whether they dispatch more work in a given time than sickles could do.

I have no doubt but the Kentish workmen would, in a day or two, be able to work with them as well as the people of Flanders; and if they were found to answer, they could soon instruct the other labourers* who had perhaps never seen a twibil, and consequently would not be quite so apt to learn the use of the Hainault scythe as themselves.

Our labourers in general, as well as the lower sort of ignorant farmers, are strangely averse to every innovation, and more particularly so to any thing they think *outlandish*. Fond of their fathers customs, they can seldom be prevailed on to change them and adopt others, though fully convinced these last are most eligible. They think it easiest walking in the old beaten track, and if you attempt reason-

M m 2

ing

* We approve much of our correspondent's sentiments on this head, being sensible there is a something in the English labourers which prevents their submitting willingly to be instructed by a foreigner. O.

ing with them, will tell you, *the way that they know will always seem shortest.*

Since this is the disposition of the men who must execute all the works of husbandry, we must not be too hasty in our improvements. It is not only necessary to find out new methods of doing the several works in husbandry; but if we will have them adopted and brought into practice, we must either contrive to instill a habit of reasoning into obstinate, self-willed clowns; or so disguise the innovation, that they may not be shocked at the novelty of it.

I have been myself much used to these human machines, and could never get any of them to change an old custom, unless I addressed myself either to their ease or their profit.

Many of them are either naturally, or habitually, lazy: these you influence by persuading them that the work may be *easier* done in your manner: this will induce them to make the attempt, and ten to one but experience confirms them in the practice.

Others are to the last degree mercenary; but these are at any time to be bought off their obstinacy; for, make it but worth their while, and they are as pliant as you please: but no longer pipe, no longer dance. The misfortune is, that as soon as their extra profit ceases, they generally relapse into their old track, unless, by practising what you taught them, on their own accounts, they can encrease their earnings.

Nothing can truly, effectually, and expeditiously promote the improvement of agriculture, but the gentlemen setting the example in the several counties. The neighbouring farmers will, perhaps, for a time, look with astonishment at the new and improved methods of culture, so different from what either they or their fathers have seen: but when they perceive the expence and trouble of this new husbandry less, and the crops considerably larger, their interest will, by degrees, prompt them to imitate what cannot in the practice but turn out to their advantage.

I have said that gentlemen must set the example; but by this I do not mean their holding a farm in their own hands, and trusting the care of it to a mercenary, and per-
haps

haps ignorant bailiff, who is besides, probably, a broken farmer; no, this is doing but little service to the public, and generally great injury to themselves: for it is in the country thought no sin to cheat a gentleman, because he can afford to lose; and if a gentleman does not look into his own affairs, he must in course be cheated.

I would not have any gentleman attempt farming, who has not a taste for it; and if he does attempt it, let him be content to dedicate a certain portion of his time to superintend every thing that is done on his land; let him not trust to other eyes than his own; if he does, he will probably be deceived; and in his improved practice, he must be particularly careful, that the men who are to execute his orders be punctual and diligent in their duty.

These inferior instruments, as I have already observed, are great enemies to innovation, and on that account often slight the work they do not like to do, and sometimes even purposely do it wrong. It is on this account I would recommend the master's inspecting the execution of every material part of his work.

In this manner gentlemen may be of real use in the countries where they live: they can afford to make experiments beyond the reach of a common farmer; and I will venture to say, that if they are judiciously and prudently made, if but one in twenty succeeds, they will be amply repaid all the expences they will be at, and well satisfied for all their loss of time and trouble, besides the thanks that will be due to them from their grateful country.

Many fondly imagine, because they see England comparatively in an improved state, that agriculture is in this island brought to its utmost perfection; but these are superficial observers indeed: we, that have had experience in the practical part of it, are fully sensible how very defective it is in many particulars.

I shall be glad to see that patriotic spirit kindled in England, which has of late made its appearance in France and Switzerland: in these two countries there are many societies established for the improvement of agriculture. Why might

might not we have such a society in every county in England? I am very certain that the excellent society, of which we are members, would vigorously co-operate with them in all their public-spirited measures.

Permit me, Gentlemen, on this occasion, to praise you for your zeal for the good of your country: you have already excited, in several parts of England, a communicative spirit, which, I hope, will yet be more generally infused. We see, in your monthly collection, a variety of letters on diverse, though equally interesting subjects; and I hope your correspondents will daily encrease, that you may not, through a want of that necessary encouragement, be obliged to be irregular in your patriotic and useful publication.

Would our country gentlemen form themselves into the societies I have mentioned, where could they find a more proper channel to convey their thoughts to the public, than your collection, which, with pleasure I say it, is already much read, and greatly approved of?

I have, in this letter, said a great deal on the improvement of agriculture; but, mistake me not, I do not mean that it should be brought about by any sudden revolution: old systems, though erroneous, are not to be at once totally rejected.

I approve much of most of the principles of the late Mr. Tull's method of husbandry; yet would I not presume at once to effectuate a total change, especially as the new practice is, in almost every part, so essentially different from that commonly in use.

Things may be carried too far; and this was the case with Mr. Tull, when, spinning out his principles to too great a degree of nicety, he sowed wheat so long on the same land, without any assistance of manure, that he, at last, had scarcely any crops at all.

This was, in fact, hurting the cause he meant to defend: it was sufficient that he had proved tillage to be of more service to land than manure: what occasion could there be to assert that land would do well without any manure at all? This was the rock Mr. Tull spilt on; and
this

this is often the case with people who are too fond of their own schemes.

Yet, in condemning Mr. Tull's imprudence, let us not deprive him of the share of honour that is so justly his due: he was undoubtedly the greatest man, in his way, this nation has for a long time produced; he loved his country, and luckily hit on a very proper method of essentially serving it: but unluckily for us, prejudice stepped in and prevented our enjoying the benefit of his improvements: we were blind to their value, till they were pointed out to us by our rivals the French; *they* first had Mr. Tull in honour, *they* first adopted his principles, and put his methods in practice.

We wanted a *Mons. du Hamel* in England, intelligent, sensible, persevering, and public-spirited: what a figure would such a man have made in this free and grateful island, especially at this enlightened period!

I am insensibly run into a greater length than I at first intended: I thought only to have given you a hint or two respecting the method of bringing into common use the Hainault scythe; but you must excuse me: if you are crouded this month, retrench what is superfluous in this letter: imagine me like a lover talking of his mistress: I am fond, nay more than fond, of agriculture; and it is natural, you are sensible, to talk most of what we are fondest of.

Before I conclude, I must observe one thing more. *Mons. Roland* is very capable of instructing some of our men, the Kentish men in particular, to whom it will not be so strange, in the use of the Hainault scythe; but I could wish the Society would be at some expence to procure from France and Flanders some men capable of using the other two scythes: this would not cost much, suppose about thirty pounds; more than three times which sum we often give for a paltry piece of painting; paltry I say, when compared to fine pictures. I hope, however, this will be taken into consideration, and that the practice of mowing
wheat

wheat may be speedily introduced with its greatest advantages.

I am, GENTLEMEN,
 London, Dec. 4, 1763. Your very humble servant,
 A SILENT MEMBER.

NUMBER LXIV.

A Letter from a Member of the Society of Arts, &c. to the Editors, on the Preparation and Making of Bay Salt in England.

GENTLEMEN,

BEING yesterday at a meeting of the Society, I with great pleasure and satisfaction heard it resolved, that a premium of one hundred pounds should be given to the person who shall make at any one salt-work, hereafter to be established in England, the largest quantity of bay salt, not less than twenty tons, within the space of the ensuing year; and for the second greatest quantity, not less than fifteen tons, the sum of fifty pounds in like manner.

This premium, which is excellent in its kind, is founded on the prodigious quantities of bay salt, which are annually imported into this kingdom, and the hint was taken from a treatise published by the very ingenious and learned Doctor *Brownrigg*, entitled *The Art of making Common Salt*. This work is well worth the perusal of your readers, especially as it contains the whole process for making bay salt, as it is now practised in other countries, and might be to advantage practised in England.

I shall in the notes refer your readers to the several parts of Doctor *Brownrigg*'s treatise, which mention bay salt, and the processes for making it.

He begins with describing its nature *, and the different methods of preparing it abroad, and first mentions the manner

* We have thought proper, for the benefit of such of our readers as may not have an immediate opportunity of seeing Doctor

manner of its being concreted, by the water being totally exhaled, by the force of the sun and air *, of which he gives several instances.

This ingenious writer then gives a circumstantial account of the manner in which bay salt is prepared in the Cape Verd islands †; and the method in which that trade, if

Doctor Brownrigg's curious treatise, to extract the parts referred to in his notes. Where the Doctor defines the nature of bay salt, he says, " Bay salt may be divided in general into two kinds. First, bay salt drawn from sea water; as is practised in France, Spain, Portugal, and many other countries. Secondly, bay salt extracted from salt springs, ponds, and lakes; as at the Cape de Verd islands, in Africa: and at Salt-Tortuga, Turks island, and many other parts of America."

* " Bay salt is prepared in a manner the most simple and easy, when the water of ponds and lakes impregnated with salt is totally exhaled, by the force of the sun and air, and the salt is left concreted into a hard crust, at the bottom of the lake or pond.

" Of salt thus prepared we have many instances in several parts of the world. Thus, *In the Podelian desert near the river Borysthenes is a salt lake, whose water, by the heat of the sun, is wasted, and turned to salt, like unto ice; so that the people ride into it with horses and waggon, and cut it into pieces, and carry it away.* I was also informed by a worthy friend, who long served as a physician in the Russian armies, that in the same part of the world, viz. on the Russian frontiers towards Crim Tartary, he had, in the summer season, travelled over vast desert plains, where grew neither tree nor herb, and which, for many miles together, were covered over with salt.

" We are told of a salina of this kind in the West Indies, called Garci Mendoza, forty leagues long, and sixteen broad. But the learned Doctor Shaw hath given us the most accurate description of several of these salines in the kingdom of Algiers, which in winter are salt lakes, but dry plains in summer; at which season large quantities of salt are dug out of them for sale. Salinas of the same kind have been taken notice of by travellers, in many other parts of the world; but these already mentioned are sufficient for our present purpose." *Brownrigg.*

† " The Cape de Verd isles which afford bay salt, are chiefly Mayo, Bonavista, and Sall. The subjects of Great Britain have enjoyed the privilege of making salt, at certain salinæ in the two first-mentioned islands, exclusive of all other nations.

if it may be so called, is carried on by the English. This account is very curious, and will not only be instructive, but entertaining to your readers.

Our

tions, ever since the marriage of king Charles the second with the infanta of Portugal. They do not pay any acknowledgment to the king of Portugal for this privilege; only, of late years, he hath imposed a tax, paid by the British captains for every ass which they hire of the inhabitants to carry the salt to their boats. The time of making the salt, is in the dry season of the year; which, in those islands, is usually from the latter end of November, to the beginning of July. Those, therefore, who would load with salt, endeavour to be there in the month of December, or January. On the west side of Mayo, or May, they bring their ships to anchor in a pretty good road, at 100 or 200 yards distance from the shore. As soon as they are on shore, they find themselves upon a bank of light loose sand, fifty or sixty yards broad; and when they have passed this bank, they enter upon the salina, or salt-marsh; which lies between the sand-bank, and some small hills beyond it. This salina is a plain, about half a mile broad and a mile long, the greatest part of which is hollowed out in salt-pits, filled at the proper season of the year with a strong brine, or pickle (as the sailors term it), to the depth of about eight inches.

Several writers assert, that this brine is only sea water, which flows through a hole in the sand-bank, like a sluice, and that only at spring tides. Those that I have conversed with, who made salt there, could give no certain information in this particular, only said they had never seen any such sluice, but had observed more brine in the salt-pits at spring tides, than at other times. But, as it is certain that there are several salt-ponds in Bonavista and Sall, which have no communication with the sea; and that all the springs nigh the salina in the isle of May have a brackish taste, and are impregnated with salt; and that the brine in the pits is much stronger than sea water; and that it is weakest in the pits which are farthest from the sea, growing stronger as it falls by a gentle descent into the pits which are nigher the shore; these and other reasons seem to prove, that this strong brine does not proceed from the sea, but springs from the hills adjoining to the salt-marsh. And this may possibly be the case, although it should be true, that the brine stands higher in the pits at spring tides, than at other times: for the sea water, although it may not flow into the pits at spring tides, may notwithstanding at such times rise so high, as to

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Our author in the next place treats of marine bay salt, prepared in France, and other parts of Europe. He gives his

“ prevent the brine from draining out of them through the
“ sand; and may have the same effect with a dam, and so cause
“ the brine to stand higher in the pits at spring tides, than at
“ other times.

“ However this be, it is certain that at the proper season of
“ the year, the sailors commonly find all these pits filled with
“ a very strong brine, or pickle; but sometimes, after long
“ droughts, they find it more scarce, and then dig little wells,
“ from which they fill their salt-pits to the depth of eight inches.
“ The bottom of these pits is a kind of oozy mud that retains
“ the brine. The sailors make them of various forms and sizes,
“ according to their fancy. Those who first arrive cleanse out
“ as many of these pits from mud and dirt, as they have occa-
“ sion for; the next ship's company do the same, and so suc-
“ cessively, till all the pits are taken up; and if any more ships
“ arrive, they are obliged to wait until those who have posses-
“ sion of the pits are served. As the fresh water exhales from
“ the pits, the salt forms into crystals, which sink to the bot-
“ tom of the brine. Twice a week they draw the salt out of
“ the pits with rakes into little heaps: and after the brine is
“ somewhat drained from it, they put it in barrows, and wheel
“ it to their large heap, where it drains further, and soon be-
“ comes hard and dry, and fit to be put on board their ships.
“ The inhabitants of the island willingly assist, for hire, in
“ making the salt; and also provide asses to carry it to the sea-
“ side: from whence it is conveyed, by boats, on ship-board.
“ and thus, if the weather be favourable, a large ship may be
“ loaden with salt in a fortnight; and frequently sooner, when
“ (as it often happens) the sailors, on their arrival, find the
“ pits full of concreted salt.

“ But, on the contrary, it sometimes happens, that the
“ rainy season continues longer than usual; and then, ships
“ have been delayed several months before they could get their
“ loading. At other times the rains have come on very soon;
“ or the sea hath been so boisterous with tornadoes (as it usually
“ is for a considerable time before the rains set in) that no salt
“ could be shipped on board; or by reason of tedious passages,
“ ships have not arrived in due time. And by such accidents,
“ many ships have been disappointed, and forced to leave these
“ islands without their loading of salt.

“ The salt is made exactly in the same manner at Bonavista as
“ at the isle of May. The salinæ at both islands are nearly of
“ the same magnitude; that at Bonavista also lies beyond a
“ sand-bank, which is about two hundred yards broad. But
“ the brine is there weaker, and does not kern so fast as at the
“ isle of May.” *Brownrigg.*

his readers a very curious extract from the transactions of the Royal Society; but his remarks and explanations of this account are most worthy of attention *.

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* “ Those, who would make a salt-marsh in France, com-
 “ monly chuse a low plat of ground adjoining to the sea, di-
 “ stant from the mouths of large rivers, but nigh a convenient
 “ harbour for boats or larger vessels. This ground must be
 “ free from springs of fresh water, and no ways subject to land
 “ floods; and, if possible, should have a clayey bottom; it
 “ should also be defended from the sea either by banks of rising
 “ ground, or by an artificial mole raised for that purpose.

“ The ground so chosen must be hollowed out into three ponds
 “ or receptacles. The first, into which the sea water is usu-
 “ ally admitted, may be called the reservoir. The second re-
 “ ceptacle (which is divided into three distinct ponds, com-
 “ municating with each other by narrow passages, and con-
 “ taining brine of different degrees of strength) may be called
 “ the brine ponds. The third receptacle is furnished with an
 “ entrance, between which and the brine ponds there runs
 “ a long, winding, narrow channel; the rest of it is divided in-
 “ to several shallow pits containing a fully-saturated brine,
 “ which in them is converted into salt, and may therefore be
 “ distinguished by the name of the salt-pits.

“ The first receptacle or reservoir must have a communication
 “ with the sea by a ditch defended on each side with walls of
 “ brick or stone; and made of such a depth, that by it all the
 “ water contained in the reservoir and other parts of the salt-
 “ marsh may flow out at low water; and by it also the sea
 “ water may be admitted into the reservoir at full sea; so that,
 “ at neap tides, the marsh may be filled with sea water to the
 “ depth of ten inches in the reservoir; and consequently at
 “ higher tides, to the depth of two feet, when there is occasion
 “ to overflow the marsh, as is done in the winter season when
 “ no salt is made; by which means the wood-work is longer
 “ preserved from decay, and the bottom of the marsh from frost
 “ and other injuries. And in order that the marsh may be
 “ thus overflowed when occasion requires, it is necessary that
 “ the several receptacles should be sunk so deep, that the ground
 “ on all sides may be sufficiently elevated to keep in the sea wa-
 “ ter at the depth above mentioned. The ditch between the
 “ sea and the reservoir must also be provided with a sluice or
 “ floodgate, by which the sea water may be admitted, retained,
 “ or let out, and the whole salt-marsh drained as occasion may
 “ require.

“ The

I could refer your readers to many very curious articles in this book, respecting the making of common salt; but as that

“ The several ponds or receptacles must not have their bottoms all upon the same level, but must be made of unequal depths; so that the first receptacle or reservoir must be eight inches and a half deeper than the salt-pits in the third receptacle. The three brine ponds, situated between the reservoir and the salt-pits, must also be of unequal depths, that adjoining to the reservoir being the deepest, and that, which is highest the salt-pits, the shallowest; but all of them must be shallower than the reservoir. And the three receptacles being thus constructed; the water standing at the same height in them all, and forming with its surface one continued plain, will be ten inches deep in the reservoir, when only an inch and a half deep in the salt-pits.

“ The judicious French author hath not given us any account of the length and breadth of the reservoir and brine ponds, but some judgment may be formed of their size from his plan of the whole work. It will be better to err by making them too large, than too small. In general, they ought to be large enough to furnish the salt-pits with a constant supply of brine fully saturated with salt; and for that purpose it is necessary to have them of different dimensions in different countries, as will be hereafter explained.

“ It is not necessary that the reservoir should be exactly of the form which the French author hath described, where the ground will better admit of another, that may be chosen. And even the brine ponds and salt-pits may be made of different forms, if due regard be had to the general contrivance of the whole work.

“ For the bottoms of the reservoir and brine ponds any kind of tough, lean clay, or earth, that will hold water, may serve very well. The French make the bottoms of their salt-pits of any blue or red clay they meet with; but in order to have a white clean salt, it is necessary that those pits should be carefully laid with some strong cement that will retain the brine, and cannot easily be broken up. As to other particulars relating to the structure of the French salt-marsh, they are sufficiently explained by the ingenious physician whose account is before inserted.

“ The marsh being thus constructed, the salt-men, at the proper season of the year, open the floodgate when the tide is out, and drain off all the stagnating water; and, if there be occasion, repair the bottom of the marsh, and cleanse its several receptacles from mud and dirt. Afterwards, when the tide rises, they, by the same floodgate, admit the salt water

that would be beside the present purpose, I shall refrain doing it.

To return to the important subject of making bay salt, our author is particularly curious in marking how the several kinds of bay salt differ from each other *; and this is
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“water into the marsh, till it stands in the reservoir at the
“height of ten inches. In a day or two, most of the water in
“the salt-pits is exhaled, and what remains in them is a very
“strong brine. They then let in more sea water; and so take
“care, every two or three tides (oftener or seldomer as occasion
“requires) to admit as much water into the reservoir as will
“supply the place of that which hath been waisted in vapours;
“constantly raising it to the height of ten inches in the reser-
“voir; and consequently, to an inch and a half in the salt-
“pits. All the parts of the marsh are thus supplied with wa-
“ter out of the reservoir; but the sea water, which flows in-
“to the reservoir, is not confusedly mixed with the salt water
“contained in other parts of the work: for, as the several
“parts communicate only by narrow passages, it is provided,
“that the salt water, flowing out of the reservoir, never returns
“there again; but gently flows along till it arrives at the se-
“cond brine pond, and afterwards at the third; being forced
“forward by the sea water, from time to time received into the
“reservoir. During this flow course, the watery fluid continu-
“ally flies off in exhalations, and the brine is continually pre-
“paring for crytallization as it gently flows along, growing
“stronger and stronger the nearer it approaches to the salt-pits.
“So that when it enters these pits, it is fully saturated with
“salt. And particular care is taken to guard the entrance of
“the salt-pits with a long winding narrow channel; by which
“means the strong pickle contained in these pits is prevented
“from returning back, and mixing with the weaker brine in
“the brine ponds. Care is also taken that the strong pickle in
“the salt-pits be spread out very thin to the sun and air, with
“a large surface; by which means the watery vapours more
“quickly exhale from it, leaving the salt concreted into cry-
“stals. These the salt-men carefully draw out, and oftentimes
“dispose into large pyramidal heaps; which they thatch over
“with straw, and so preserve them from the injuries of the
“weather. Thus, at a small expence and trouble, a salt is pre-
“pared which is found extremely fit for all domestic uses; and
“thus France is also furnished with a very profitable article for
“exportation into foreign countries.” *Brownrigg.*

* “The several kinds of bay salt differ from each other,
“chiefly in the following particulars, viz.

“ 1. In

a matter of more consequence than may at first appear, as it may enable the makers, who may in future establish manu-

" 1. *In the size of their crystals.* For bay salt, in proportion as it lies a longer or a shorter time in the pits, or as the solar heat, or force of the air, is more or less powerful, will be formed into greater or smaller crystals. Upon these accounts the French cream of salt, and the blown salt of the isle of May, which are skimmed off the surface of the brine, are of the least grain. The Portugal salt is commonly of a larger shoot than that of France; and that of Tortuga, much larger than that of Portugal.

" 2. *In purity.* For there is scarce any bay salt which is not mixed with several heterogeneous substances; as slime, mud, sand, and clay; which are raked up with it from the bottom of the pits where it is made, or mixed with it whilst it lies on the ground in heaps. There are some kinds of bay salt which are mixed with bitter purging salt, and probably with other salts. From all which mixtures it acquires peculiar qualities.

" 3. From the mixture of clays and earths it acquires various colours. The French bay salt is commonly grey; where the bottoms of the pits are of blue clay, it is more white; where of a red clay, it hath a reddish cast; and that of Soustou, nigh Bayonne, is of a greenish colour. The Portugal and Spanish salts are whiter and purer than the French, but yet retain a considerable mixture of mud and dirt. In general, all salt, when dry, is more white; when moist, more pellucid.

" 4. Some kinds of bay salt are more apt to contract a moisture from the air than other kinds. And this either because the salt is of a smaller grain, and comes into contact with the air in a greater number of points; or else, because of some mixture of calcarious, or alkaline salts, which greedily imbibe the aqueous moisture.

" 5. Some kinds of bay salt are distinguished by their smell; as the Hampshire and Portugal bay salts, which have a fine violet flavour when stored up in large heaps; probably from the oleaginous or sulphureous particles mixed with sea water, or imbibed by it in the ponds, and there altered and subtilized by fermentation.

" 6. Bay-salt, from the variety of substances mixed with it, differs greatly in taste, as well as in other qualities. Thus, according to Galen, the salt of the lake Asphaltites, or Dead Sea, is extremely nauseous and bitter; probably from bitter purging salt, and other mixtures. The salt made at

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manufactories, to distinguish how good, or how bad, the bay salt they prepare is; and, if bad, may enable them to find proper methods of remedying the evil in future.

I shall next proceed to mention Dr. Brownrigg's propositions, deduced from fair argument; where he describes several processes, by means of which bay salt may, to great advantage, be made in England.

In his first he observes that, *In several parts of England, large quantities of bay salt may be extracted from sea-water, during the hottest months of the year; by receiving the salt-water into ponds, and suffering its aqueous parts thence to exhale by the heat of the sun, and the operation of the*

“ the springs of Peccais in Languedoc hath also a bitter taste.
 “ Whereas the salt made in the Cape de Verd islands, Salt-Tortuga, and in many other places, from the water of
 “ springs and lakes, hath a very agreeable taste. Although
 “ bay salt made from the same kind of water in different pits,
 “ or from other different circumstances attending its preparation, may differ greatly in taste as well as in other qualities.
 “ Thus the marine bay salt, although commonly palatable,
 “ may sometimes acquire a bitter taste, from calcarious salts
 “ mixed with it; as may happen after long droughts, when
 “ the pits from which it is drawn have not been freed from
 “ bitterness.

“ 7. Bay salt oft-times *alters in taste, as well as in other qualities, by long keeping.* The salt of Peccais, for example,
 “ which, when first made, is so nauseous and bitter, as to be
 “ unfit for domestic uses; by keeping, acquires a taste that
 “ is more agreeable: for the bitter purging salts being very
 “ soluble in water, easily dissolve by the moisture of the air,
 “ and sink through the common salt in a liquid form, leaving
 “ it more pure, and free from its bitter taste. These calcarious salts may also be frequently washed by rains from
 “ amongst bay salt, as it lies in heaps exposed to the weather. Alcaline salts may, after the same manner, be discharged from amongst common salt; or when long exposed to the air, may imbibe its volatile acid spirit, and
 “ with it be converted into a neutral salt. And for these reasons, not only bay salt, but most other kinds of common salt, become better and fitter for domestic uses, by being
 “ kept a considerable time exposed to the air in a dry place.”

Brownrigg.

the air and winds *. It is impossible not to admit the force of his reasonings on this head, which, in fact, amount almost to a demonstration.

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* “ If in some of the warmest and least rainy parts of England a pond, at a moderate computation, usually loses seventeen inches depth of water in exhalations during the four hottest months, more than it receives from the heavens during the same time; then if a firm and tight pond be filled with sea-water to the depth of sixteen inches in the beginning of May, all that water, together with the rains that fall into the pond, will be usually thence exhaled by the end of August, and the bottom of the pond will remain covered with a crust of salt; as in summer may be observed on the sea-shore in hollows of rocks, where small quantities of sea-water have been left by the tide, or, as is more observable in the salinæ before described, from which vast quantities of salt are annually collected.

“ The evaporation of sixteen inches depth of water by the sun and air, is here supposed to take up four months: in rainy summers it may require a longer time, or even may not be effected during the whole summer. But it also often happens in many parts of England, that not an inch depth of water falls in a whole summer month, and the weather in such dry seasons being usually very hot, half an inch depth of water may then be supposed to evaporate every day; so that the whole evaporation of sixteen inches depth of sea-water will, in such a dry season, be performed in thirty-two days.

“ The following calculation may give some idea of the quantity of salt, which may thus be extracted from ponds covered with sea-water to the depth of sixteen inches. A cubic inch of pure water weighs about 256 grains; and if we suppose that the sea-water on the coasts of England contains $\frac{1}{32}$ part of salt, then each cubic inch of sea-water will contain $\frac{256}{32} = 8$ grains of salt; and sixteen cubic inches $16 \times 8 = 128$ grains. There would therefore remain, after the evaporation of sixteen inches depth of water, 128 grains of salt upon every inch square of the pond, and upon every yard square 21 lb. 9 oz. 288 grains averdupoize weight; and upon every statute acre of such ponds 104,544 lb. or 1245 bush. 64 lb. of bay salt¹. The price of which, if sold for a shilling a bushel, would be 62l. 5s. 9d. so that ground

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“ rightly

“ ¹ Bay salt now costs at London, exclusive of excise, four shillings and four-pence per bushel.”

The doctor has taken great pains in his calculations ; but after all he observes, that it would not be adviseable to make a trial of this method ; especially as that contained in the second proposition may be easily put in practice, which is far more commodious, expeditious, and certain. I only, therefore, refer your readers to the first proposition, that they may the better be enabled to compare one method with another, and be thereby more competent judges which to prefer in practice.

In his second proposition, this very ingenious writer says, that *in several parts of England large quantities of bay salt may very commodiously be extracted from sea-water, after the same manner that is practised in France, and in other parts of Europe* *.

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“ rightly prepared might thus be made to produce annually
 “ an excellent rich crop of salt, which would not require more
 “ labour and expence than is necessary for crops of far less
 “ value.

“ But as the above method of preparing bay salt from sea-
 “ water, is tedious and subject to miscarry by rains, and the
 “ salt so made could scarce be collected without mud, and the
 “ calcarious earth, and other gross ingredients of sea-water,
 “ would remain mixed with it, it would not therefore be ad-
 “ viseable to make a trial of this method ; especially as the fol-
 “ lowing may easily be put in practice, which is far more com-
 “ modious, expeditious, and certain.” *Brownrigg.*

* “ The parts of England most proper for this work, are those
 “ which are the warmest and least rainy, as on the coasts from
 “ Dover to Yarmouth : although the same work will succeed
 “ very well in other places *. For if such large quantities of
 “ bay salt can be prepared in France, as are sufficient for the
 “ whole annual consumption of that large kingdom, and of all
 “ those nations who purchase it from thence, and that in so
 “ short a time as one fortnight of good weather ; why may not
 “ large quantities be prepared in the above mentioned, and se-
 “ veral other parts of England, during the whole summer sea-
 “ son ? If salt can be extracted in France, even in the night
 “ time, why may it not in England during the day ? If bay salt
 “ can be made in considerable quantities, and to profit, in the
 “ sun

“ * Particularly on the coast from Dover to Land’s-end.”

Our sensible author very judiciously leads his reader, by slow degrees, towards perfection, in the art of making bay

“ sun pans of Hampshire ², why not in larger quantities, and
 “ to much greater profit, in salt marshes, which are much more
 “ artful and commodious ?

“ There are several parts of the English coast, which do not
 “ lie above two or three degrees farther north than the coasts of
 “ Britany, where such vast quantities of bay salt are made ; and
 “ particularly the coasts above pointed out, where this salt is
 “ chiefly wanted for curing fish and naval provisions ; where the
 “ heat of the sun is not much less than on the coasts of Britany ;
 “ where the winds and air will also have the same effect as in
 “ Britany ; and where, in all probability, there is considerably
 “ less rain to retard the operation, than on the French coasts.
 “ So that it is not likely that this work would proceed much
 “ slower in England than in France.

“ But, that this may more plainly appear, let it be granted,
 “ that the heat of the sun is so much greater in Britany than on
 “ the coasts of Essex and Suffolk, that water will exhale even
 “ twice as fast in the first, as it does in the last-mentioned places,
 “ during the summer months. Allowing even this supposition,
 “ it will be no difficult matter to shew, that such an in-
 “ conveniency might be overcome ; and that, under such cir-
 “ cumstances, as much salt might be prepared in an English
 “ salt marsh as in one in Britany, and with no great difference
 “ of expence.

“ Supposing, therefore, that from a surface of one yard
 “ square, as much water exhales in Britany, as from a surface
 “ of two square yards in England. And if we farther suppose
 “ two cylindrical vessels of equal capacities, but so formed,
 “ that the surface of the fluid in one is double to the surface
 “ of the fluid in the other, and that these vessels, when filled
 “ with water, are placed, that with the larger surface, in
 “ England, and that with the smaller surface, in Britany :
 “ then, according to the first supposition, equal quantities of
 “ water will exhale from those two vessels in equal times, and
 “ both vessels, as they contain the same quantity of water,
 “ will become empty in the same space of time. And if the
 “ water in both vessels be of an equal saltness, an equal quan-
 “ tity of salt will remain in each vessel, after all the water is
 “ exhaled.

“ It is therefore very possible to answer all the requisites in
 “ the following problem, viz. *By a moderate heat of the sun, and*

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“ the

² “ See the foregoing account of the method of making bay salt in
 “ France.”

bay salt. The processes contained in the first and second proposition above referred to may, with advantage, be brought

“ *the force of the air, from a given quantity of water to exhale a certain quantity given, in a given time; for this may be done by proportioning the surface of the water to the force of the sun and air, and to the quantity of water required to be exhaled in the time given.*

“ Should it then be required to make the same quantity of bay salt at a salt work in England, as is usually made at a salt work of the same kind on the coast of France; that this may be done, it is necessary that equal quantities of sea-water (supposed at both places of an equal saltness) should be received into both works, and that the evaporation should be equal in both. Which would be the case, if the water in the salt work in England be exposed to the sun and air with a greater surface than in the French work; so that this greater extent of surface may compensate for the less force of the sun's heat: or, in other words, so that the whole surface of the two salt works may be in a reciprocal proportion with the evaporations from equal portions of their surfaces. For example; if the evaporation from a certain part of the French salt work be double to the evaporation from an equal part of the English work, then must the surface of the English work be double the surface of the French work. And since an equal quantity of salt water or brine is supposed to be contained in both works, therefore the English pits must, in such case, have only half the depth of water in them, that is in the French pits. So that in the reservoir, where there is ten inches depth of water in the French work, there must be only five inches depth in the English work, and in the shallower pits in the same proportion.

“ The foregoing calculations are made upon a supposition, that it is dry weather, during the whole time that the water is evaporating; but as in the salt marshes this business is frequently disturbed by rains, it is necessary, in practice, also to make an allowance for the water received from the atmosphere into the salt marsh during the evaporation; and upon that account, to enlarge the surface of the English work yet considerably farther. For supposing only the same quantity of rain to fall into the English, as into the French salt work, as the evaporation is supposed slower upon a certain part of the English work than upon an equal part of the French work, it is necessary, that the water falling into the first work be spread over a larger surface, than that which falls into the latter, in order that in both it may be exhaled in
“ equal

brought into practice; but they have also their disadvantages, when compared to the process described in his third

“ equal times. But as the surface of the English work is supposed larger than the surface of the French work, more rain may probably fall into it than into the French work; so that it may be necessary to extend the surface still farther; and so to evaporate the excess of water, which it receives from the atmosphere.

“ How far it may be really necessary to extend the English work farther than a French work of the same capacity, in order to make an equal quantity of salt in each of them, can only be ascertained by proper experiments. But all circumstances being duly considered, we may reasonably conjecture, that, in several parts of England, if a salt marsh was formed, whose surface was only a fifth or a sixth part larger than that of a French salt marsh, as much salt, at least, might be prepared in the English marsh, as in that of France. And if we consider the situation of the French coast, how it must be watered with heavy rains from the western ocean, we cannot suppose that less water falls there in rain and other aqueous meteors, than on the coast about Plymouth, which at a medium is thirty-one inches in the year; whereas on several of the warmest parts of the English coasts there does not annually fall above twenty inches. So that during the summer season, more water will probably fall into the French salt marsh than into one of a fifth part larger surface, situated on the coasts of Essex, Norfolk, or Suffolk.

“ If therefore it should prove true in fact, as in all probability it will, that as much salt may be extracted from an English salt marsh, as from one in France, when the surface of the former is one-fifth larger than that of the latter: then, in order that both works may contain an equal quantity of brine¹, it will be necessary, that in the reservoir where the salt water is ten inches deep in France, it be eight inches one-third in England; and the salt-pits, where the brine is one inch and a half deep in France, it must be one inch and a

“ quar-

“ ¹ The following theorem may be of use in determining the depths of the several ponds, so that the two salt marshes may be made to contain equal quantities of brine, viz.

“ As the surface of the broader pond in the English marsh, is to the depth of the narrower pond in the French marsh; so reciprocally the surface of the narrower, is to the depth of the broader.

“ Thus,

third proposition, which is much more perfect. In this he says, *Bay salt may be extracted in England from sea-water in larger quantities, and with more certainty, than by the foregoing method; if care be taken to preserve the brine, contained in the salt pits, from being diluted with rains, and to promote the evaporation of the water by several artificial means, which may easily be put in practice* *.

On

“quarter deep in England”. And care should be taken to lay
 “the bottoms of the several pits in such a manner, that the
 “depth of the brine in them may answer to the above-men-
 “tioned proportions.

“The English salt marsh must be made larger or smaller, as
 “occasion requires; so that care be taken to observe the above,
 “or such other proportion in the dimensions of its several parts,
 “as by experience shall be found most proper. In general, it
 “is necessary that the reservoir and brine ponds be of a suffi-
 “cient magnitude to furnish the salt-pits with a constant supply
 “of the strongest brine, in the place of that which is continually
 “reduced to salt.” *Brownrigg*.

* “Those who are desirous of preparing more salt than can be
 “done by the foregoing methods, and would have their work
 “less interrupted by rains, and would chuse to have their
 “brine lie deeper in the salt-pits, and to have the salt formed
 “into large crystals, may for these and other purposes have
 “recourse to the following methods.

“First,

“Thus, if the surface of the French reservoir be a hundred yards
 “square, its surface will then contain 5760000 square inches. And

“the English reservoir $5760000 \times \frac{5}{100} = 6912000$ square

“inches. Then as the French reservoir is ten inches deep, according
 “to the above theorem, $6912000 : 10 :: 5760000 : 8\frac{1}{2}$. And
 “the product of the two extremes will be found equal to that of the
 “two means, which give the solid contents of the French reservoir
 “in cubic inches.

“² Supposing the French salt-pits ten inches square, their surface
 “will contain a hundred square inches; and the surface of the Eng-
 “lish salt-pits (being one-fifth of an inch larger) 120 square inches:
 “then, $120 : 1\frac{1}{5} :: 100 : 1\frac{1}{4}$.

“The same proportion will hold good, if the surface of the French
 “salt-pits be supposed of any other magnitude.”

On reading the process referred to in the note, I dare say every impartial person will allow that the doctor has studied

"First, it will be proper to make all the salt-pits of the marsh, in one long row, extended from east to west¹, and for each pit to make covers of thin boards, or rather of coarse canvas, or sail-cloth, stretched on frames of wood, and painted white. These covers must all be fixed with hinges to strong posts and beams on the north side of the pits, so that they may be let down and drawn up with cords and pulleys, or by some other contrivance, somewhat like draw-bridges. These covers thus fixed, may be let down over the pits like a shed or pent-house, in rainy weather; and in dry weather may be erected almost to a perpendicular, but inclining a little towards the south; so as to form a wall with a south aspect, and thus may serve a double use, as coverings for the pits in wet weather, and as reflectors of the sun's heat upon them in dry weather. For when they are let down they will prevent the rain from mingling with the strong brine contained in the salt-pits; and when they are drawn up in sunshiny weather, they will strongly reflect the rays of the sun upon the brine contained in the pits, and thus greatly promote the evaporation of its aqueous particles. The hinges on which the reflectors turn may be fixed about eight or ten inches from the ground. By which means, when the reflectors stand upright, there will be an opening left beneath them, through which the air will continually flow in a brisk current, and greatly increase the evaporation of the water.

"In order also that no diluted brine may flow into the salt-pits during rains, it will be necessary at such times to stop the narrow winding channel leading to the pits, by a little sluice. This channel also must be made very narrow, and every where covered over with boards. And there must not be a pond at the entrance of the salt-pits, as in the French marsh, but only a narrow covered trench, running parallel to the side of the pits which is opposite to the reflectors. And the pond, which forms the entrance of the pits in the French salt marsh, must in this be detached from them; and instead thereof must be formed a fourth brine pond, communicating with the third by a long narrow channel.

"If

"¹ It will be also necessary to make the bottoms of the salt-pits of alabaster, or some other strong cement that will not easily break up; by which means the salt may be drawn white and pure, as in Spain and Portugal, and not dirty and grey, as in the French marshes."

studied his subject well. The directions, he gives, are such as will, probably, have the desired effect; and are, besides, to

“ If these contrivances should be reduced to practice in England, the salt will probably crystalize there much faster than in the French salt marshes. And the brine may be kept as deep, and even deeper there than in the French salt-pits. In which case the English salt marsh will require fewer pits than in the method proposed in the foregoing proposition. And if a shower or two of rain chances to fall, the operation will only be retarded while the rain continues; whereas, in the French open work, such a quantity of rain falling often puts a stop to the work for two or three days, as all the fresh water that fell must again be exhaled, before any salt can be formed.

“ But in order to prevent the weaker brine from being diluted with rains; and in order also to provide a sufficient quantity of brine which may always be ready to supply the place of that which crystalizes in the salt-pits, it may be necessary to dig in the earth four cisterns adjoining to the brine ponds above proposed, which may be made tight at the bottom and sides with brick and clay, into which the brine in the ponds may be admitted when the rainy weather comes on, so that the brine of different degrees of strength may run into separate cisterns, and may again be pumped out of them into the several ponds from which it was drawn, as soon as the weather grows dry, and the fresh water, which fell into the ponds, hath by proper drains been first discharged out of them.

“ As to the salt-water in the reservoir, if it should not be found necessary to preserve it from rains in cisterns; when so much rain falls, as to make it fresher than sea-water, it may be let out, and sea-water admitted into its place. And in order to promote the evaporation, and to make the salt-water in the reservoir fitter to supply the first brine pond with brine of a due strength, it may be proper, by means of a small fire engine, continually to force up the salt-water in the reservoir as often as occasion requires, and by means of a diverger fitted to the engine to make it descend again into the reservoir like a shower of rain; by which means the evaporation of the watery vapours will be greatly promoted, after much the same manner as is practised at several salt works in Germany where the brine is very weak.

“ And thus by augmenting the force of the sun’s heat, and of the air, and by promoting the evaporation of the watery vapours, and by preventing the brine from being diluted
“ with

to appearance, easily practicable. I am not without hopes but that, encouraged by the noble premiums offered by the Society, several ingenious persons will, within the space of the ensuing year, erect salt works on the doctor's plan, laid down in this proposition; especially as it will, most probably, turn out to their particular advantage.

By the three processes hitherto mentioned it is proposed to make the bay salt from sea water; but in the fourth proposition the doctor discovers another method of procuring this necessary and valuable commodity. He observes, that *in several parts of England, large quantities of bay salt may, with great ease, be prepared from the natural brine of salt springs, and also from rock salt, dissolved in weak brine, or sea water* *.

The

“with rain, it is very probable, that during the summer season
“double the quantity of salt might be prepared at an
“English work with these contrivances, that is now usually
“prepared at a French salt marsh of equal magnitude.”

Brownrigg.

* “In Cheshire, where they have natural brine almost fully
“saturated with salt, if they should think proper to extract bay
“salt from this brine, it may be pumped directly into salt
“pits (without any previous preparation) there to be wrought
“with reflectors, as described under the foregoing proposition.
“Only, if there be any ochre or mud mixed with the brine,
“it may be proper to draw it first into covered reservoirs or
“cisterns, there to stand till these impurities are subsided, and
“from thence to let it out into the salt pits as occasion may
“require.

“But if, as it commonly happens, the brine be not fully
“saturated with salt, then it may be exposed to the sun and
“air in brine ponds with reflectors fitted to them until it be
“reduced to a saturated brine, after which it may be received
“into the salt pits. Or else the weak brine may be fully sa-
“turated with rock salt, where that can be had cheap, or
“even with white salt, if due encouragement be given by the
“legislature. Or where there is plenty of rock salt and no
“brine, fresh water, or sea water, (if it can be conveniently
“had) may be saturated with it, and reduced to bay salt in salt
“pits with reflectors as before described.

“Thus large quantities of bay salt may be made from natu-
“ral brine at one operation, as is practised at the isle of May
Vol. I. No. 4. P p “ and

The greater the variety of the processes of making it, so much the more advantage will naturally accrue to the manu-

“ and in several parts of the West Indies. Of the quantities
 “ which can thus be extracted some conjectures may be made
 “ from the following calculations.

“ Suppose a salt pit sixteen feet square. A work consisting
 “ of eighteen pits of the same size, placed all in a row, will be
 “ ninety-five yards long, and will be somewhat larger than the
 “ salt pits of the French marsh before described. The area
 “ of each of these pits will be two hundred and fifty-six square
 “ feet, and if they are covered a quarter of a foot deep with
 “ brine, then each pit will contain sixty-four cubic feet of
 “ brine. But from ¹ Dr. Baynard’s experiments, a cubic foot
 “ of common water weighs exactly seventy-six pounds troy.
 “ Therefore sixty-four cubic feet weighs $64 \times 76 = 4864$ pounds
 “ troy. Supposing therefore each pound, or twelve ounces, of
 “ brine to contain three ounces and a half of salt, then 4864
 “ pounds of brine will contain 17024 ounces or 1064 pounds
 “ averdupois of salt, and eighteen pits of the same dimensions
 “ 19152 pounds, which is exactly 228 bushels of salt, each
 “ weighing eighty-four pounds averdupois.

“ But as a pound troy, or twelve ounces, of water, will dis-
 “ solve more salt than three ounces and an half; if therefore
 “ the pits be filled to the depth of three inches with fully-sa-
 “ turated brine, more salt will be contained in them than here
 “ supposed. If it therefore be granted, as many affirm, that a
 “ gallon, ale measure, of the strongest Cheshire brine, which
 “ is almost fully saturated, holds three pounds averdupois of
 “ salt, (which is very nigh a pound of salt to three pounds of
 “ water) the $7059\frac{3}{4}$ gallons of fully-saturated brine, supposed
 “ as before to be contained in the eighteen salt pits, will hold
 “ somewhat more than 21177 pounds, or two hundred and
 “ fifty-two bushels nine pounds of salt.

“ In order to estimate the time required to prepare the
 “ above quantity of salt, let it be supposed (as with great rea-
 “ son it may) that in dry summer weather, half an inch depth
 “ of water will, one day with another, exhale from the salt pits
 “ when wrought with reflectors. Then three inches depth,
 “ the quantity of brine contained in the salt pits, will be ex-
 “ haled in six days; so that at the end of six days all the salt,
 “ contained in the brine, will remain dry at the bottom of the
 “ pits; which according to the first supposition, is two hun-
 “ dred and twenty-eight bushels of bay salt; and, according
 “ to the second, somewhat more than two hundred fifty-two
 “ bushels.

“ ¹ See his Exp. made at Oxford; in the Ph. Tr.”

manufacturers of a commodity, as they have an opportunity of chusing that which is most suited to their convenience; and consequently they will have it in their power to erect their works at less expence, and carry them on with greater ease, than if they had only a single plan to pursue, and a single process to work by.

In his fifth proposition, the very ingenious Dr. Brownrigg recapitulates the advantages that will accrue from making bay salt in England, observing that *bay salt may be prepared here, by the foregoing methods, at a very moderate expence, equal in goodness to the best foreign bay salt, and in quantity sufficient for the consumption of all the British dominions* *. Is not this a great encouragement for the establish-

“bushels. And if we divide those quantities by six, the number of days in which all the water is exhaled, we shall find that, according to the first supposition, thirty-eight bushels, and, according to the second, somewhat more than forty-two bushels of bay salt may be daily prepared in dry summer weather, in a work of the above dimensions.

“The same calculations also shew the quantity of salt, which may be prepared from sea water in a salt marsh, where the pits are of the dimensions above supposed; for in both cases the salt pits must be kept constantly filled with a fully-saturated brine. But if only half the quantity here supposed, *viz.* twenty-one bushels, or 1764 pounds of salt, can be made every dry summer day in a salt marsh of the above dimensions, it is as much as is commonly made every day from brine in a saltern whose boiler contains eight hundred gallons.” *Brownrigg.*

* “If, in the first place, we compare the French salt marsh with the English saltern for boiling white salt, we shall find the expence of making the former much less than that of making the latter; in which the expence of boiling-houses, hot-houses, furnaces, salt-pans, &c. is very considerable; and which also frequently require large sums to be laid out on them to keep them in repair; whereas the French marsh requires very little repairs. Besides, the expence of coals or other fuel is very great in the English saltern, which is all saved in the French bay salt work; and the expence of labour will be more in proportion to the quantity of the salt made in the English white salt work than in the French salt marsh. And for these reasons; though the French bay salt

establishment of such kind of salt works? I own, I think it is, and that it is a very happy circumstance, that the persons

“ is better than the English boiled salt, yet it can be made for
 “ seven or eight shillings a ton, which is little more than one
 “ third of the price for which white salt can be made in the
 “ most commodious parts of Great Britain.

“ If again we compare the French salt marsh with the English
 “ marsh, as proposed under Prop. II. we shall find that where the
 “ situation is equally convenient, the difference of the expence in
 “ making them will be very inconsiderable. For as the partitions
 “ between the salt pits, and the trench and sluice which admit the sea water, and the walls between the ponds, are the
 “ most expensive parts of the work; if therefore the English
 “ work be one-fifth part more in surface than the French work,
 “ it will not require above one-tenth part more expence to make
 “ it, than to make the other. And this small difference in the
 “ prime cost of the two works, will occasion but a very trifling
 “ difference in the expence of making salt in them; especially
 “ as the works, when finished, will require little repairs for
 “ twenty or thirty years.

“ The expence of the English salt marsh will indeed be considerably increased by the additional contrivances proposed under the third Prop. The most expensive of these will be the reflectors, which I am informed by a good judge, if made of strong sail-cloth stretched on frames, and painted white, and properly fixed to posts, so as to cover eighteen pits of sixteen feet square, might probably cost 50*l.* or at the most 60*l.* And should all the other contrivances cost 60*l.* more, or even double that sum; this additional expence would be very quickly accounted for in the profit of the work, as it is probable that double the quantity of salt might be made with these contrivances, that could be made without them. And the additional labour, which these contrivances would occasion, would make very little increase of expence, as it would all be performed when no salt is drawn, and consequently when the labourers have little else to do.

“ As to the work proposed under Prop. IV. for making bay salt from natural brine; twice as much salt might be prepared in it in one day (according to the foregoing calculations) as is usually made in a Cheshire saltern, whose pan contains eight hundred gallons; although the saltern would require much more money to erect it, and to keep it in repair, besides the expence of coals; which is the heaviest article, costing oftentimes above two-thirds of the value of all the salt prepared with them,

“ All

persons who may propose to be candidates for the premiums to be given by the Society, will have so good a guide to conduct them in their infant undertakings.

The

“ All these things therefore considered, it may with reason
 “ be presumed that bay salt may be made in several parts of
 “ Great Britain, nearly as cheap as it is now made in France.
 “ And as the French and other foreign salt must be charged
 “ with a considerable freight when brought to the British mar-
 “ ket, it is very probable that bay salt made in Great Britain
 “ might be afforded cheaper there than French or any other
 “ foreign salt; especially as there is 1s. 1 $\frac{1}{2}$ d. paid more in
 “ duties for every half hundred weight of foreign salt, than for
 “ the same quantity of British salt consumed in England ¹,
 “ which ought to be considered as a bounty to the British ma-
 “ nufacturer of bay salt. Moreover, the law now allows three
 “ bushels duty free, for every wey (or forty bushels) of Bri-
 “ tish salt carried coast-wise; which allowance will not only
 “ make up for the waste in carriage, but will also pay the ex-
 “ pence of carrying the salt to market, to most parts of Eng-
 “ land. The laws therefore, as they now stand, are extremely
 “ favourable to the British manufacturers of bay salt, who to-
 “ gether with the public, would, in all probability, reap great
 “ advantage by making salt works, such as before proposed.
 “ And such numbers of these works might be made at proper
 “ places along the British coasts, and nigh brine pits where
 “ fuel is scarce, as would afford bay salt enough for all the
 “ occasions of Great Britain; and might even furnish an article
 “ for exportation in those ships which are sent from thence
 “ empty to Denmark, Norway, and into the Baltick, for hemp,
 “ flax,

¹ “ By the laws as now established, white salt, and other salt of
 “ British manufacture consumed in England, pays a duty of 3s. 4d.
 “ per bushel, weighing fifty-six pounds.

“ But bay salt, and other foreign salt there consumed, pays a du-
 “ ty of 6s. 8d. per bushel, weighing eighty-four pounds. So that
 “ fifty-six pounds of foreign salt pays 4s. 5 $\frac{1}{2}$ d. in duty; from which
 “ 3s. 4d. being deducted, there remains 1s. 1 $\frac{1}{2}$ d. which is paid for
 “ fifty-six pounds of foreign salt more than for the same quantity of
 “ British salt consumed in England. In both cases an allowance is
 “ made for prompt payment. In Scotland the excise upon British salt,
 “ as well as foreign salt there consumed, is only half of that paid in
 “ England.

“ And all salt applied to curing such fish as is exported to foreign
 “ markets, is in both parts of the united kingdom free from duty.”

The reasons for establishing works of this nature in England are very cogent; there is annually a great consumption of this commodity in England, and Scotland, almost the whole of which is imported from abroad, at a very considerable expence to the nation. All the money which goes for the purchase of bay salt will by that means be saved, and the balance of trade with foreigners will be by so much the more in our favour. Excuse any inaccuracies in this letter, as it was written in a great hurry, lest it should be too late to be inserted in your next publication.

Your humble servant,

London, Dec. 15, 1763. AN ATTENDING MEMBER.

“ flax, iron, timber, and other commodities of those countries.

“ It remains now to shew, that bay salt, thus made in Great Britain, will answer all the purposes of foreign bay salt, and will be equall good for curing fish and flesh, and for all other culinary uses.

“ As to the sea salt, no one will call this in question, since it is made from the same water as foreign marine bay salt, and the method proposed for making it appears to be at least as good as that which is practised by foreigners. And it hath already been found by experience, that bay salt made in Hampshire is not inferior to foreign bay salt for the above-mentioned uses. And where natural brine is sufficiently pure, as at Droitwich, there is no doubt but that an excellent bay salt might be made from it at one operation, as is practised in the isle of May, and in other hot countries. But if there be much calcarious earth, or other earthy impurities mixed with the brine, as in Cheshire; such brine will afford a better salt, if it is only of a moderate strength, so that it may remain a considerable time in brine ponds, there to mellow, and to heighten into a fully-saturated brine, and to deposite its earthy impurities, which would be very prejudicial to the salt if mixed with it.” *Brownrigg.*

NUMBER LXV.

*Copy of a Letter from Mr. William St. Clair, to Mr. Rocque, of Walham-Green, respecting the Improvement of Land by Artificial Pastures *.*

S I R,

I HOPE you will forgive this trouble from one who has been for many years a lover and practiser of husbandry ; and your fame having reached me, I am curious to know, from yourself, if what I have heard is fact ; which is, that you have forty-five or fifty acres, and that you make thirty-five pounds per acre : this is what I can have no conception of ; and, if it is so, I am sure you have brought improvement to the highest pitch of any in Britain.

If you will be so good as to favour me with a scheme of your management, it will be the highest obligation you can confer on me. Of late I have heard much spoken in praise of burnet grass : I never have seen it ; but as I hear you deal in it, I can apply to no better hand to be informed of its quality, and whether or not you think it exceeds other grasses for hay and pasturage.

I have an inclosure of about twenty acres I propose to lay down with grass seeds the ensuing spring : if I have encouragement from you, I would lay it down with burnet grass, if I can be supplied with the seed ; and I should be glad to know the quantity should be sown upon the acre, and if it is sown by the bushel, or by weight, and the price ; also the nature of the soil which suits it best. Your answer to this will very much oblige,

S I R,

Your most humble servant,

Edinburgh, Nov. 21, 1763.

WM. SAINT CLAIR.

NUM-

* Having been favoured by Mr Rocque with this letter, and the answer he wrote to it, which immediately follows ; we could not defer presenting these two curious pieces to our readers.

NUMBER LXVI.

Mr. Rocque's Answer to the above Letter, being a Description of the Culture of the Burnet and Lucern Plants, as now practised with great Success by him.

S I R,

I HAVE received your favour of the 21st of December, by which I find a story loses nothing by being handed about: 'tis true I have forty acres of land, but have but about ten in lucern. As to what they say of my making thirty-five pounds per acre, I will tell you how that was.

I sold the first, second, third and fourth mowings at a shilling per rod, which came to thirty-two pounds per acre: then I mowed it a fifth time, so suppose they computed the fifth to come to three pounds, which certainly made thirty-five pounds, which it did. But I don't approve mowing it so often; for it bleeds it too much, and gives too much air to the natural grass the ground is inclined to bear.

If your soil is very good, you can make seven or eight loads per acre.

Your land must be deep both for lucern and burnet: you must trench your ground two spades deep, or three if it will bear it; but be very cautious of not turning up the dead ground; for, if you do, you will be seven years before you can bring your ground about. I have experienced the nature of dead soil, and it is very clear to me, the disorder amongst the cattle proceeds from it, when the frost comes so strong as to open the pores of the ground, so as to reach that dead soil, which is of so poisonous a nature that it infects the grass *.

Burnet

readers. Mr. Rocque is requested to accept of our thanks for his kind communication; and any future pieces, from so intelligent and experienced a hand, cannot but be highly acceptable to us and the public. N.

* The dead soil, as Mr. Rocque terms it, may be very probably fatal to pastures and grass lands; but what reasons he may

Burnet is a very valuable grass; it is always in sap: the great property of it is, you can keep the grass from the middle of September, till February, March, and April, which are the months other grasses are commonly scarce.

You must feed the burnet, for if you do not, it will be ready to mow before the proper season of making hay. It must be fed from February till the 1st of May; the seed will be ripe about the middle of June: you must thresh it then, between wet and dry, and leave part of the seed with the hay, which will be as good as corn and hay together, even if the seed is not amongst it. The stalks are so solid that it can equally serve for hay and corn.

I actually now keep a horse with only the burnet hay or straw that has been threshed, and every body who sees him is astonished to see how well he looks!

Burnet must be mowed twice, (the second mowing must be in the middle of September) and threshed like the first, which is in June.

You cultivate burnet much in the same manner you do lucern. First get your ground in good order; if it will not bear trenching, dung it well; the fibres will get in the four soil, being drove by the top, if the top be strong: I have experienced it. I dug up a root of saintfoin, which was nine feet ten inches long. I was astonished to find, that that root could live in that dead four poisonous soil; for I am very certain, had I taken a bushel of that bad soil,

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Qq

and

may have for ascribing the disorder among the cattle to the influence of this dead soil, we are at a loss to imagine. That it should have this effect, is not very apparent; its being of hurt to pastures, &c. may proceed from its being permitted to lie still in an inactive state, so as not to be permeable to the influences of the sun, air, and frosts: whereas in land that is kept in tillage, we cannot but be of opinion, and experience warrants us in it, that turning up the under stratum may very often be of service to correct the soil, and the dead earth will soon be meliorated by the action of the sun, air, and frosts; to which every part of it is at different times exposed by the frequent stirrings the land receives in its preparatory tillage, when it is intended for a full crop of corn. N.

and spread it upon a rod of ground, it would have poisoned it.

Your ground being in good order, you may sow it in April, May, June, July, and August; it is to be sown, broad-cast, like the lucern; but before you sow it, harrow and roll your ground, then sow twelve pounds to an acre; mix no corn with it; then harrow it with a light harrow, and roll it again: about ten days after, you will see your seed coming up with a round leaf. Keep your crop very clean the first year, of all things; then it will keep itself clean afterwards.

The difference in the cultivating these two grasses is this; you sow but twelve pounds of burnet to an acre, and mix nothing with it; but as to lucern, you must first sow a bushel of barley or oats, then fourteen pounds of lucern per acre: never mow it till it is in bloom, and when you do, harrow it with a heavy harrow, which will keep your lucern clean from natural grass, help the vegetation greatly, and breed the nitre. I am,

S I R,

Your humble servant,

Walham-Green, Dec. 6, 1763.

BARTHOL. ROCQUE.

N U M B E R L X V I I .

A Letter from Philip Thicknesse, Esq; to Mr. Robert Davis, respecting an extraordinary Phænomenon observed on a Plant.

S I R,

STRANGE as the following account may appear to every reader, it is nevertheless true; and if any of the correspondents of the *Museum Rusticum* doubt the fact, after considering the following relation, you may refer them to me, or any other of the gentlemen, whose names I have made known to you for that purpose.

About fourteen years ago a particular friend of mine, who had a garden near James-Street, Bedford-Row, was informed

informed by his servant, that a *Chrysanthemum* (a flowering plant commonly known) in the garden appeared to have very small particles of quicksilver spread over the whole surface of its leaves and stalks ! My friend (who is not apt to let the slightest information escape him, and by that means wants very little) examined this plant with all the attention due to so extraordinary a production, and was thoroughly convinced of the fact : every leaf and stalk had a multitude of small globules of quicksilver adhering thereto, and which seemed to (and no doubt did) issue from the perspiratory ducts of the plant.

The fact being ascertained, my friend suffered several ingenious men of his acquaintance to examine the plant, and enquire into the cause ; who were all satisfied of this extraordinary production, though none could account for it : and it remains a mystery to this day.

My friend, and other persons who examined it, frequently collected a great part of the quicksilver from several of the branches by striking them, and catching the globules or small drops, which instantly united in the hand, and left no doubt that it was pure crude quicksilver ! and the next day, after thus gathering it, it gave fresh proofs of its limbetick quality ; for not only the surface would be again powdered over, but in the hollow of the leaves, and particularly in those formed by the insertion of the foot-stalks, small drops also would be formed by the conflux of the small particles continually emitted !

In this state it continued about three weeks or a month, till the frost killed it, together with the rest of its species.

My friend, knowing his servant to be ingenious, took every precaution to find out whether he watered the *Chrysanthemum* with any solution of quicksilver, or used any art, or whether it really was the production of chance ; and he was thoroughly convinced of the latter, for had the servant known such a secret, he could have repeated it another year, and thereby have raised a large sum of money by exposing such a curiosity to the public.

The only tolerable reason, therefore, which can be assigned towards leading to a discovery is, that as my friend frequently amused himself with a variety of chemical experiments (among which there were some wherein quicksilver was employed in various forms) the glasses and crucibles used, together with the refuse of it, were washed and thrown out near the place where this *Chrysanthemum* grew, and the grateful plant undertook spontaneously to restore again to its master, in this unheard-of manner, and in purity too, what it had received in some corrupt state! On the other hand, my friend made many experiments on the same kind of plants, all which either died, or failed of the wished-for effect *.

Perhaps this account may lead some of your readers to pursue this matter further; many great discoveries have been made by chance: but as this story borders on the *marvellous*, you are at liberty either to print, or tell the name of,

S I R,

Your humble servant,

Dec. 17, 1763.

PHILIP THICKNESSE,

P. S. If, as I have heard asserted, it be true, that men who have taken calomel in great quantities, have, with a microscope, perceived it to issue through the pores of the skin, it cannot be more extraordinary that a plant should be operated on in the same manner,

* If we mistake not, we have been informed that there is a possibility of mixing mercury, in some forms, with the sap of a plant by a kind of inoculation, *viz.* by making an incision in the bark, and inserting the preparation; part of which the sap will in its circulation, or course, imbibe: we desire, however, no great dependence may be had on this, as we are not certain of the fact. O.

NUMBER LXVIII.

*A Letter to Mr. Robert Davis, on the Advantages of cultivating Lucern **,

S I R,

THOUGH the lucern has been cultivated with great success in some parts of England, and its advantages and qualities, with the method of cultivation, very fully set forth in Miller's Dictionary, yet as it is there set down by the name of Medica, and in a book that is not so likely to fall into the hands of the many who will seek instruction from the *Museum Rusticum*, I think it a very proper subject to be mentioned therein, in order to encourage those, who have a mind to be sufficiently informed of its wonderful increase, to lose no time in propagating a grass, from which so much benefit must arise †.

In

* This letter was written by the same gentleman, who favoured the *Museum Rusticum* with the piece marked Number III. in which we must request our readers to correct the following Errata, viz. page 16, line 5, for *trees only as*, read, *trees only that*; and page 17, line 15, for, *year the animalculæ is*, read, *year the egg of the animalcula is*.

† The gentleman, who favours our work with this letter, refers our readers to Miller's Gardener's Dictionary for information respecting the manner of cultivating it. As this work of Mr. Miller's is of a high price, we shall, for the benefit of such as have no opportunity to see it, give the ingenious author's sentiments on the subject. Under the title Medica, he says, "The method I would direct for the sowing these seeds (of lucern) is as follows: After having well ploughed, and harrowed the land very fine, you should make a drill quite across the ground, almost half an inch deep, into which the seeds should be scattered very thin; then cover them over a quarter of an inch thick, or somewhat more, with the earth; then proceed to make another drill, about a foot and a half from the former, sowing the seeds therein in the same manner as before; and so proceed through the whole spot of ground, allowing the same distance between row and row, and scatter the seeds very thin in the drills. In this manner an acre of land will require about six pounds of seeds; for when it is sown thicker, if the seed

In April last I cleared a small spot of ground, in order
to

grows well, the plants will be so close as to spoil each other in a year or two, the heads of them growing to a considerable size, as will also the roots, provided they have room. I have measured the crown of one root, which was in my possession, eighteen inches diameter, from which I cut near four hundred shoots at one time, which is an extraordinary increase, and this upon a poor dry gravelly soil, which had not been dunged for many years; but the root was at least ten years old; so that if this crop be well cultivated, it will continue many years, and be equally good as when it was first sown; for the roots generally run very deep in the ground, provided the soil be dry; and although they should meet a hard gravel a foot below the surface, yet their roots will penetrate it, and make their way downward, as I have experienced, having taken up some of them, which were above a yard in length, and had run above two feet into a rock of gravel, which was so hard as not to be loosened, without mattocks and crows of iron, and that with much difficulty. The reason for directing this seed to be sown in rows, is, that the plants may have room to grow, and for the better stirring the ground between them, to destroy the weeds, and encourage the growth of the plants; which may be very easily effected with a Dutch hoe, just after the cutting the crop each time, which will cause the plants to shoot again in a very little time, and be much stronger than in such places, where the ground cannot be stirred; but when the plants first come up, the ground between should be hoed with a common hoe; and if in doing of this you cut up the plants, where they are too thick, it will cause the remaining to be much stronger. This hoeing should be repeated two or three times, while the plants are young, according as the weeds are produced, observing always to do it in dry weather, that the weeds may the better be destroyed. With this management the plants will grow to the height of two feet and more, by the beginning of August, (it having been sown in April,) when the flowers will begin to appear; at which time it should be cut, observing to do it in a dry season, if it is to be made hay, and keep it often turned, that it may soon dry, and be carried off the ground; for if it lie long upon the roots, it will prevent the shooting again. After the crop is taken off, you should stir the ground between the rows with a hoe, to kill the weeds, and loosen the surface, which will cause the plants to shoot again in a short time, so that by the beginning of September there will be shoots four or five inches high, when you may turn in sheep upon it, to feed it down; for it will not be fit to cut again the same season; (*our correspondent cut a second crop in*
the

to try the experiment ; and in the beginning of October I
cut

the beginning of October) nor should the shoots be suffered to remain on the plants, which would decay when the frosty weather comes on, and fall down upon the crown of the roots, and prevent their shooting early the succeeding spring. So that the best way is to feed it until November, when it will have done shooting for that season ; but it should not be fed by large cattle the first year, because the roots being young, would be in danger of being destroyed, either by the trampling upon them, or their pulling them out of the ground ; but sheep will be of service to the roots by dunging the ground, provided they do not eat it too close, so as to endanger the crown of the roots. The beginning of February, the ground between the roots should be again stirred with the hoe, to encourage them to shoot again ; but in doing of this you should be careful not to injure the crown of the roots, upon which the buds are at that time very turgid and ready to push. With this management, if the soil be warm, by the middle of March the shoots will be five or six inches high, when, if you are in want of fodder, you may feed it down till a week in April ; after which it should be suffered to grow for a crop, which will be fit to cut the beginning of June, when you should observe to get it off the ground as soon as possible, and stir the ground with a Dutch hoe, which will forward the plants shooting again, so that by the middle or latter end of July, there will be another crop fit to cut, which must be managed as before ; after which it should be fed down again in autumn ; and as the roots, by this time, will have taken deep hold in the ground, there will be little danger of hurting them, if you should turn in larger cattle ; but you must always observe not to suffer them to remain ; after the roots have done shooting, lest they should eat down the crown of the roots below the buds, which would considerably damage, if not destroy them. In this manner you may continue constantly to have two crops to cut, and two feedings upon this plant ; and in good seasons there may be three crops cut, and two feedings, which will be a great improvement, especially as this plant will grow upon dry barren soils, where grass will come to little, and be of great use in dry summers, when grass is often burnt up. And as it is an early plant in the spring, so it will be of great service, when fodder falls short at that season, when it will be fit to feed at least a month before grass or clover ; for I have had this plant eight inches high by the tenth of March, old style, at which time the grass in the same place has scarcely been one inch high." The above is the method recommended by Mr. Miller for the cultivating of lucern : for our parts, we should rather incline to prefer that practised by Mr. Rocque, who sows it in the broad-cast, fourteen pounds to an acre, and keeps his crop clear from natural grass and weeds,
by

cut a second crop *; and I have all the reason imaginable to believe, from what I have already perceived, that an acre of lucern will produce more feed, and be of more service to a farmer, than four acres of meadow land.

The late Admiral Vernon had, behind his study window, a small spot of this lucern; and he, as I am well informed, used frequently to point out to it, and tell his tenants and neighbouring farmers, that *that* spot of ground maintained his two coach-horses †! but the thing was new, and the generality of farmers do not chuse to employ their land in cultivation of *outlandish* grain.

In

by dragging over it a strong heavy harrow, which, though it should split the crown of some of the roots, would do them no material injury (see page 298.) We would recommend it however to the ingenious, to give the two methods a fair trial, and communicate to us the result of their experiments: perhaps it might answer very well to the farmer, cultivated either way; and in fact our principal reason for preferring Mr. Rocque's method, is its approaching nearest to the common husbandry, and therefore more likely to be soon brought into general practice. N.

* Mr. Miller seems to think it will not be fit to cut a second time the first year. Perhaps this gentleman's land was better than that on which Mr. Miller made his experiments; the season might also be more favourable. See the last note.

† Mr. Miller, mentioning the great increase of this plant, has the following words. "I have been assured by persons of undoubted credit, who have cultivated this plant in England, that three acres of it have fed ten cart-horses, from the end of April to the beginning of October, without any other food, though they have been constantly worked. Indeed, the best use, which can be made of this grass, is to cut it, and give it green to the cattle: where this hath been daily practised, I have observed that by the time the field has been cut over, that part which was the first cut, hath been ready to cut again, so that there has been a constant supply in the same field, from the middle of April till the end of October; when the season has continued long mild, and when the summers have proved showery, I have known six crops cut in one season; but in the dryest seasons there will be always three. When the plant begins to flower, it should then be cut, for if it stands longer, the stalks will grow hard, and the under leaves will decay, so that the cattle will not greedily devour it. Where there is a quantity of this cultivated, some of it should be cut before the flowers appear; otherwise there will be too much to cut within a proper time."

In short, they do not, nor will try, what they think doubtful experiments; but if every gentleman, who has an acre of land to spare, would employ it in the cultivation of this grass, (a grass that is both hay and corn,) and by that means convince his tenants and neighbours of its utility, neither he, or they, would have any cause to repent it. And for their full instruction for that purpose, I will refer them to Miller, this being meant only as an advertisement of a seed, though well known, so little propagated in a climate that it never fails to prosper in, if rightly managed, and when once got out of the ground, will remain without further trouble for many years *.

I am, SIR,

Felixtow Cottage, Nov. 30, 1763.

Your's, &c.

NUMBER LXIX.

A Letter to the Editors, recommending the Planting of Vines on Castle Walls, where they will bear fine Fruit.

GENTLEMEN,

IF those gentlemen, who have old castles or ruins on their estates, would plant vines on the tops, where they can find breaks sufficient to put in mould, and turn the vine branches over, and cultivate their growth in this inverted state, they will have finer fruit than any which grow in the usual way.

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R r

I know

* We must not omit mentioning the hardy nature of this plant. The writer quoted in the preceding notes says, that in the very cold winter, 1728-9, he had some roots of this plant, which were dug up in October, and laid upon the ground in the open air till the beginning of March, when being planted again, they shot out very vigorously soon after; nay, even while they lay upon the ground, they struck out fibres from the under side of the roots, and had begun to shoot green from the crown. But the same writer observes, that wet will destroy them, for having sown some seed on a moist spot of ground for a trial, they came up very well, and flourished exceedingly during the summer; but the winters rains rotted the roots at bottom, and killed most of them before spring.

I know a clergyman, who has planted some on the church tower; and by weaving five or six bunches of grapes together, when they first began to form, they have appeared as one bunch when ripe, and as superior in flavour as in quantity, owing to the dryness of the soil wherein the vine grew.

I am, GENTLEMEN,

Your's, &c.

Epſom, Dec. 18, 1763.

A. B.

NUMBER LXX.

Copy of a Letter to Mr. Rocque, of Walham-Green, from Mr. Corbet, of Salop, respecting the Culture of the Burnet and Timothy Grass.*

SIR,

HEARING so great a character of it, I must desire you to send me down enough of your burnet-seed to sow three acres of ground, which I suppose will be six-and-thirty pounds; viz. twelve pounds to an acre.

I intend to sow it in March, or April next, as you shall advise, and shall save seed from it the first year, and mow it: I suppose the seed will be ripe, and fit to mow in June: I purpose grazing it afterwards till September, but how long it must be after the burnet has been mowed and taken out of the field, before I turn in cattle or sheep, I must learn from you.

My intention is to let the burnet grow from September to the middle of January, or the beginning of February, then to turn in cattle or sheep (I suppose sheep may be turned

* We cannot omit this opportunity of returning thanks to Mr. Rocque, in the name of the public, as well as ourselves, for his great regard to the welfare of this his adopted country, of which his constant and unwearied endeavours to improve the state of agriculture, and his willingness to communicate to us what may be worthy of notice, are undoubted testimonies.
N. R. O.

turned in sooner than large cattle) and let them stay in till the latter end, or the middle of May; then let the burnet grafs grow till it is fit to mow, which I suppose will be in the latter end of June.

What I must do afterwards, I desire to know of you; whether it may be mowed again, and when?

As this is a new thing in our country, I should be glad so to manage as to have it in perfection; this makes me desire of you such particular directions: be pleased, therefore, to let me know wherein I am right in what I propose, and when wrong?

How long will burnet-seed keep good, and fit for sowing? In a book that I take in, called *Museum Rusticum et Commerciale*, No. III. for November, there is a letter from a gentleman, marked Numb. LII, page 230. which acquaints the public that he has been at your house; that you have cultivated burnet three years; gives a great character of your success; says he saw your Timothy-grafs seed; says it is only fit for wet, or bog lands, growing from every joint, like the scutch, or couch grafs, so as if it was sowed in up-land, and if you was disposed to plough it, you could not get the Timothy-grafs out of it.

But I request an account from you of its properties, as I shall have a greater regard to your account than the book: if it is only fit for wet grounds, I will have some down to try.

Pray let me know what quantity of Timothy-grafs seed will do to sow an acre, and what the price of it is; and I will then send you my orders for some of it.

The book I mention takes notice of a black-rooted burnet, that grows in Germany: do you know it?

Another book I have, recommends a wild madder that grows in Wales and England on barren grounds, called *Squinaneg-wort*; formerly used by the apothecaries, for the cure of a sore throat. He recommends it to be cultivated for the use of dying of cloth. Can you procure me any of the roots, to be sent me down in the spring, to be planted?

The first book I mentioned says, that you are trying several sorts of grasses. If you can spare me any of the seed, should be glad to try them myself.

Your's, &c.

Salop, Dec, 7, 1763.

EDWARD CORBETT.

P. S. If a gentleman, after he has had your burnet-feed upon his ground for five or six years, or less time, has a mind to plough it, how must he manage it then? I wrote to you some time ago about the *anemonies* and *ranunculus's* I sent to you for, but have been favoured with no answer. I desire you would give me an answer to this as soon as possible, that I may know if I can depend on you for the burnet and Timothy feeds.

NUMBER LXXI.

Mr. Rocque's Answer to the above Letter, describing the Culture of the Burnet, Timothy Grass, &c.

SIR,

I Have received yours, and shall, according to your order, send you thirty-six pounds of burnet-feed this day se'nnight, with a pound of *anemonies* and a hundred of *ranunculus's*. You rate them so low, that I cannot send you my best kinds.

Your three acres of burnet must not be sown till April, and if your ground is not in extraordinary good order, defer sowing it till May; and do not forget to keep it very clean the first year, as I have observed before *.

You may save seed the first year; but the first year's sowing will not be ripe enough in June.

You must not mow it till you find the seed loosen from the pod, which will be about the middle of July.

If sowed in May, you must not graze it as you propose, because young grass bleeds too much; but leave your grass till

* See Mr. Rocque's Letter to Mr. St. Clair, page 296.

till February or March, for the first year; then, if you have a mild winter, you will find you will have an astonishing crop in March, as rank as clover in May: you may then feed it till the beginning of May, at which time take your cattle off, and leave your crop till the middle of June, when it will be ready to mow, and the seed will be ripe. In a letter I have already wrote * on this subject, my directions were, to thresh the burnet between wet and dry; but you may thresh your seed clean, because since the time I wrote that letter † I find that the burnet is of such a strong nature, that when the horses feed upon it, their flesh is so firm, that the highest-kept horses are not to be compared to those fed upon burnet, for firmness of flesh.

The chaff likewise, it is my belief, is as good as pollard to a horse. I fed my horse with the chaff, and add but one-eighth part of pollard, and think he thrives very well upon it.

As to the time of feeding, you need make no distinction about it. The sheep, and other cattle, may be turned in promiscuously at the same time; but never feed them on the burnet while you have other grass, because no other grass will keep but the burnet.

I have sowed burnet-feed two years old, which grew very well; but have not yet experience enough to tell you how long it will keep fit for sowing.

It is my opinion, when we feed our cattle upon it, we shall have firmer meat than ever we had.

As to Timothy-grass, it grows prodigiously quick. I have sowed it, for the first time, in September last; so that I know very little of it, except by report; but will rely only upon my own experience, which I shall make of it: it is now a very strong turf, that appears to be ten years old.

Lord Robert Manners brought me one root from *Lincolnshire*, that grew on a quarry; the stem of the grass was about two feet and a half high; the seed was ripe, and larger than that brought from Virginia.

I planted

* See the Letter referred to in the last note.

† See page 297, *antea*.

I planted the root in October last, and it has branched out above two inches long. I hope to be able to give you a better account of it, if we live till the latter end of next year; and shall likewise be able to give you a description of the *sheep's-fiscue* grafs-seed.

As to the black-rooted burnet *, which grows in Germany, I believe I have some of the seed which *Lord Robert Manners* brought me out of *Lincolnshire*. He tells me it grows to a very great height; that is all I know of it.

The wild madder is a root they use for the scarlet dye; but here we plant it in the best lands, because the root of it pays very well.

I have been told, that a good acre is worth an hundred pounds the third year: it may be mowed once a year for hay at the decline of the sap: it might be mowed twice, but (as I said already) it is dangerous to bleed the root.

The ground where you plant it must be very deep, and easy to work, for the better taking up the roots, which will run seven or eight feet deep in the earth.

It grows in the same nature as the asparagus root. If you chuse to have some plants, I can supply you with as many winter plants as you please; because mine are three years old, and I shall take them up in the spring.

To return to the burnet; if you have a mind to plough it after five or six years, or less time, plough it as you would clover; and the crown of the root will serve to manure the ground, which will be fresh for any other crop. We remark, every plant draws a different salt.

I remain, S I R,

Yours to command,

Dec. 24, 1763.

B. ROCQUE.

* This is, perhaps, the *sanguisorba spicis longissimis*; otherwise called, *pimpinella maxima canadensis*. See Miller's Dictionary.

NUMBER LXXII.

To the Editors of the MUSEUM RUSTICUM.

GENTLEMEN,

I SEND you herewith the copy of a letter I sent some time ago to the secretary of the Society for the encouragement of Arts, Manufactures, and Commerce: I should take it as a very particular favour if you would give it a place in your useful collection, as I am of opinion it would be of service to the community to have the knowledge of its subject as much circulated as possible. Believe me,

GENTLEMEN,

Caernarvon,
Dec. 2, 1763.

With great respect,
Your most obedient servant, &c.

Copy of a Letter to Dr. Templeman, Secretary to the Society of Arts, on the Culture of Furz for Winter Fodder.

SIR,

THOUGH my residence is, for the most part, at a great distance from the metropolis in Wales, yet I thought it some years ago my duty to become a member of your Society; I love my country, and would wish to encourage every thing that can tend to its well doing.

Agriculture has received much encouragement in the Society: I imagine, therefore, it cannot be *mal a-propos* to mention a plant which is now in many parts a troublesome weed, but which may be cultivated in enclosures on some poor lands to advantage.

The great aim of the present farmers seems to be the procuring plenty of winter-fodder at a cheap rate. To answer this intention, they should some of them practise a method much in use in this principality, and which I would willingly

willingly recommend to the notice of the gentlemen appointed to settle the premiums for the ensuing year *.

As we do not in many districts sow any great quantity of corn, straw for fodder is a scarce commodity: besides our lands being poor, what straw there is, must of course be short.

To remedy this evil we sow furz, otherwise called gorse or whins: this we cut at three years growth, and after passing it through a machine which cuts and bruises it at the same time, we give it to our horses, which feed on it and thrive to admiration.

I have had much experience of the benefit of this food: it is healthful, strengthening, and gives them spirits; they are fond of it, and eat it without inconvenience, the spines which would prick their mouths being broke by the machine. I have kept nine or ten horses for some years past, in winter time, chiefly on this food.

We cultivate it in manner following. Almost any soil will do for it, but it should not be too wet.—After plowing the land, it is sown with a broad-cast: one pound of seed is enough for an acre, though some sow more. The farmer sows a certain number of acres, in proportion to the number of cattle he has to feed †.

The second and third years he sows the same quantity of land with the same crop.

The third year, as I mentioned above, the furz is fit to cut from the first sowing, and the others in due course follow.

Some poor husbandmen, who sow but little, send every morning, during the winter season, two men into the furz-field

* We cannot but approve of every attempt towards encreasing the number of our artificial pastures, which indeed cannot be too numerous: we may perhaps soon have some adapted to every soil and situation. O.

† Mr. Miller, in treating of the furz plant, seems to think it of no other use but for burning; yet he acknowledges it will grow to profit on poor land, which will neither produce corn nor good grass; and this is, on many occasions, a sufficient inducement towards cultivating it as a winter fodder under certain circumstances. A.

field with a scythe, and a large basket slung on a pole: these mow it, tread it into the basket, and bringing it home, they prepare, with the machine above mentioned, the day's allowance of food for the beasts: the basket, in general, holds enough to serve for the day.

This practice of sowing furz might certainly be followed with profit in many parts of England: I know, myself, several places where there are large tracts of poor land fit for this purpose, and winter fodder is exceeding scarce; but the misfortune is, this method is not generally known, and wants the sanction of authority to recommend it.

It could not surely be amiss for the Society to publish a premium to be given to the person who should sow the greatest number of acres with this plant, to be used as fodder; excluding Wales, where the custom is common, and suffering none to claim the premium who have ever before sown it for this use. However, as I mean only to give a hint to the Society in this letter, there is no necessity for enlarging on this particular, of properly giving the premium I propose: I shall leave that to those gentlemen who, being constant attendants on the meetings of the Society, and committees, must be much better judges than I can pretend to be in the affair.

I could wish every gentleman would communicate to the Society the different practices in husbandry, as used in his neighbourhood. This Society would then be a center of intelligence to the whole kingdom, and any man, who chose to study agriculture from experience, might resort for that purpose to their valuable repository of letters.

I shall be glad of every opportunity of doing service to the Society, and in consequence, to the public; on which account you may, perhaps, now and then hear from me on such subjects as I may, in future, think to be sufficiently interesting to engage your attention, which must be very importantly employed. I am,

S I R,

Your very humble servant,

Caernarvon, Nov. 20, 1763.

A MEMBER, &c.

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S f

N U M-

NUMBER LXXIII.

A Letter to the Editors, from Mr. John Irwin, on the different Admeasurements of Land, in Ireland, England, and France,

GENTLEMEN,

I AM much obliged to your correspondent D. C. for rectifying my oversight with regard to the proportion between the English and Irish acre, (in the piece marked No. II. of your work) or rather of reminding me to set myself right.

If he reads the paragraph again, he may perceive it to amount to no more than a defect (caused through hurry) in the manner of expression, which possibly might have often happened to himself, for *humanum est errare*.

I am sorry he did not favour us with his name, (unless it would diffuse a blush over his modesty) that we might know to whom we are indebted for this correction; as also the proportion between the two acres in square feet, which would be of more general use to the landholder.

However, since this gentleman hath reminded me of the neglect in my former letter, I will endeavour to amend it in this, and in such an extensive manner as I hope will prove both useful and instructing, especially to the lower and less-informed farmer.

Proportion between the English and Irish acre stated.

The English acre contains

160 square poles, which at $16\frac{1}{2}$ feet, long measure, each pole, make 43560 square feet.

160 poles, at $5\frac{1}{2}$ yards each, long measure, make 4840 square yards in the acre.

The Irish acre contains

160 square poles, or perches, which at 21 feet, long measure each, make 70560 square feet.

160 ditto, which at 7 yards, long measure each, make 7340 square yards.

The Irish acre exceeds the English in square feet 27000
 ————— in square yards 3000

There is also another English statute perch, or pole, used in the admeasurement of woods, which is 18 feet, or 6 yards, long measure.

Besides these statute measures, there are in England what may be called *customary perches*, differing one from the other in length in various counties.

In *Staffordshire* the customary perch is twenty-four feet—In the forest of *Sherwood* twenty-one; the foot there being eighteen inches; the measure whereof is marked in the chancel wall of *Edwynston*, and in the church of *St. Mary* in *Nottingham*.

In *Herefordshire* the perch of walling is sixteen feet and a half; a perch of ditching twenty-one feet, &c.—The geometrical perch is ten feet, being the same measure that was in use among the old Romans.

As I have proceeded thus far in giving the different admeasurements of land in England, and as it is now become so much the fashion to read French books on the subject of husbandry, I shall, from a very eminent writer of that nation, give some account of the French *arpent* or acre, as varying in size in different provinces.

The small *arpent* in use about Paris contains one hundred square perches, each perch being eighteen feet long; so that the *arpent* consists of 32,400 royal feet.

The middling *arpent* in use in *L'Isle de France*, contains also one hundred square perches, but this perch is twenty royal feet long. The *arpent* therefore here consists of 40,000 royal feet.

The great *arpent*, as fixed by the *ordonnance* made for the due government of the king's royalties on the waters, and in his forests, and on that account called the *royal measure*, contains in like manner one hundred perches; but this perch is still longer than that last mentioned, being twenty-two royal feet; so that the *arpent*, royal measure, contains 48,400 feet.

The *acre*, properly so called in a part of Normandy, contains one hundred and sixty square perches, the perch the same length as the last; so that this Norman acre consists of 77,440 square feet.

The *journal** in use about Bourdeaux, containing 888 square *toises*, or French fathoms, is divided into three *pougnérées*. The *pougnérée* contains seventy-two *escas*, 10,656 square royal feet, or 296 square *toises*, or fathoms. The *esca* is twelve feet two inches long.

The *journal* used about St. Dizier in Champagne, contains eighty square perches, each perch twenty-two royal feet long.

The *septerée* of Clermont-Ferrand, contains 800 square *toises* or fathoms. The *journal* of Lorrain consists of 250 square *toises*, each *toise* being ten Lorrain feet long, equal to eight feet nine inches and ten lines, royal Paris measure.

As in the above account mention is frequently made of the Paris royal foot, it may not be amiss to mention the proportion it bears to the English foot, which being divided into 1000 parts, the Paris royal foot will be 1068, and the Lorrain foot 958 of those parts; or the Paris foot being supposed to contain 1440 parts, the English will be 1350, the Paris royal foot exceeding the English by about seven lines and a half. The French, like us, divide their foot into twelve inches, and the inch into twelve lines. The geometrical foot contains ten digits, and the digit ten lines, &c.

I am, GENTLEMEN,

Your very humble servant,

London, Dec. 4, 1763.

JOHN IRWIN.

P. S. We must not omit to observe, that the perch, pole or rod of land, is in some places called a *Lug*. In many places among the old farmers, the acre of land is estimated by the proportion of seed used for sowing it; by which means of course it varies according to the fertility or poverty of the

* The *journal* is so called from the French word *jour*, a day, and signifies a day's work, or such a quantity of land, as a yoke of oxen may be supposed to plow in a day. N.

the soil. The Welsh acre usually contains two English acres. An *acreme* of land is ten acres. The fourth part of an acre or a rood of ground is, in some parts of England, called a *farding-land*, or *farundale* of land.

NUMBER LXXIV.

Questions concerning the Anil, or Indigo Plant, and the Cotton Shrub; with a Letter to the Editors.

GENTLEMEN,

IN Number XI. and XXVII. of your *Museum Rusticum*, there are many very useful questions, some of which I have the pleasure to see already answered.

As you intend your instructions for every part of his majesty's dominions, give me leave to ask you a few questions; which (if you think the answers may be of use to those who intend to settle in any of our new acquisitions in America) be so kind as to publish, for the perusal of your ingenious correspondents.

I am, with the greatest esteem,

GENTLEMEN,

Your most obedient humble servant,

London, Dec. 17, 1763.

AMERICUS.

What climate and soil is most proper for producing the anil (of which the indigo is made) and the cotton shrub; and how are they propagated?

What are the proper seasons for planting and cutting them?

What is the process of making the indigo from the plant *?

* We presume our correspondent has already seen what Mr. Miller has written on this subject, and wishes to know the culture of these plants from some person who has, by experience, enabled himself to lay down the best methods now practised in Carolina, Georgia, &c.

NUMBER LXXV.

A Letter to the Editors, recommending the Culture of the Caltha, or Marsh Marigold, as a Winter Pasture for Cattle.

GENTLEMEN,

I Find that the lovers of agriculture are endeavouring to bring about a reformation in our meadows, which have, I own, for ages, been strangely over-run with a mixture of useful and noxious plants.

It is a great doubt with me, whether most of the disorders incident to cattle, may not be with great justice ascribed to this want of nicety in our meadow-husbandry.

Our climate is naturally favourable to the growth of grass: to this do we implicitly trust, without reflecting, that many noxious and unwholesome, not to say poisonous herbs, are by these means permitted to associate themselves with the innocent and salutary herbage.

There is certainly no other way of remedying this than by bestowing some part of our attention on the culture of the good grasses; by saving their seeds distinctly, and sowing them separately.

This has been already done, by many sorts of artificial pasture; lucern has been cultivated to great advantage, faintfoin is well known to be of great service in particular soils, and clover is almost universally propagated in England.

Of late some experiments have been tried in cultivating burnet, as a pasture, which is a very hardy and wholesome plant, and succeeds, as I am informed, extremely well; nay, I can in some sort assert, that it is worth cultivating, as I have this summer seen it growing, and in a thriving state, on an indifferent soil.

We owe the idea of cultivating burnet for this use to my worthy friend Mr. Wyche, than whom no man can have a greater share of public spirit.

My intention of writing you this letter is, to point out to the public in general, and the Society in particular, an
object

object worthy their attention; a plant which may be cultivated as a winter pasture for cattle; which is very hardy, preserves its verdure during the winter; and cattle are very fond of it: it is the *caltha*, or marsh-marigold. This plant is perennial, and grows naturally in England in low meadows.

I can the more readily recommend this plant to notice, as it has been tried in France, and found to answer very well.

It would, perhaps, be worth while for the Society to offer a premium to encourage its culture next year. The seeds might easily be saved, and if they were sown the latter end of the summer, the leaves would be proper to use as fodder in the winter season.

Monfieur du Hamel, to whom the French nation is so much obliged, recommends the *caltha* to be used in this intention; and why should not we hope for the same success in our trials to cultivate it, as the French have had in the experiments they have already made? You will take this short hint, I hope, in good part; my meaning is good: being fond of every thing that has any relation to husbandry, I could not, on this occasion, refrain writing to you; imagining, if I may judge by the proposal, that your work will be extensively useful.

I am, GENTLEMEN,

Your most obedient servant,

London, Aug. 15, 1763.

AN INTENDED READER.

N U M B E R LXXVI.

A Letter to the Editors, on the Benefit of a deep crumbly Loam for Fruit Trees.

GENTLEMEN,

MANY assert, that the earth which lies under the surface, is not fit for the purposes of vegetation, till it has been several years exposed to the influence of the frost, air, sun, &c. but, I am of opinion, this is not confirmed

confirmed by experience. I know that a deep crumbly loam is a fine soil for fruit-trees; and I also know, that if it is laid in ridges during one winter and a summer, any soil, of the nature above described, will nourish fruit-trees, though it should have been turned up from six feet deep in the ground.

In fact, there is not, I have reason to believe, so much danger in this *barren earth*, as some affect to call it, as may be imagined: the vegetative powers may, perhaps, be a little more locked up, than in that earth which has undergone a fermentation from the moist nitrous air; but in one year, with proper stirrings, it will certainly be fit for all the purposes of vegetation; as I have, myself, more than once experienced.

Yours, &c.

Dec. 24, 1763.

A HUSBANDMAN.



Museum Rusticum, &c.

For JANUARY, 1764.

THE THIRD EDITION,
Revised and corrected by the EDITORS.

NUMBER LXXVII.

A Letter to the Editors, from a corresponding Member of the Society of Arts, on the Culture of the Sugar-Cane, &c. in the West-India Islands; and recommending the Planting them in the Southern Parts of the American Continent.

GENTLEMEN,

FROM what I have seen of your work I cannot but greatly approve of it, and from the knowledge I have of the English dominions in America I cannot in the least doubt but that the *Museum Rusticum* will be found highly useful even in those remote parts of the world: with this view I now write, being willing to communicate that knowledge I have acquired, in various peregrinations in the West-Indies, to the English planters who are, and will be, settled to the south of Georgia.

I have not been very long arrived from the North-American continent, and was last year in Georgia, from whence I made an excursion or two to the southward, prompted by my curiosity to see part of Florida and Louisiana.

VOL. I. No. 5.

T t

From

From the observations I made in this tour, I am induced to conclude that sugar-canes might, to very great advantage, be planted in many parts of the territory east of the river Mississippi, ceded to England by the late treaty *.

The soil is in most parts deep, fine, and fresh; the climate is quite warm enough, and the country is not so subject to hurricanes as almost all our islands are.

Another great reason which should induce the English to encourage the planting the sugar-cane in our new acquisitions in North-America is, that wood is very plentiful there; an article so very essential in the boiling houses, that sugar can by no means be made without a large quantity of it at hand; for when fuel is scarce, or dear, the sugar produced from a piece of canes will sometimes be of less value than will defray the expences of making it. This is a thing well known among the planters; and for this reason, at the first settling a sugar-work, as much care as possible is taken, not only against any present, but even any future want of this very useful and necessary article of fuel †.

This consideration induces me, I say, to imagine that the sugar-cane might to more advantage be raised in North-America than in our West-India Islands; for in these latter the madness of clearing has been carried to such a height, that

* We agree with our correspondent in this opinion, and hope the planting of canes will be encouraged in the new settlements, as it cannot but be a means of reducing the price of sugar, which is by custom become almost a necessary of life. A.

† With proper care in the preservation of the fire-wood, which is now very plentiful on the continent of North-America, we may perhaps be enabled, in the article of sugar, not only to supply our home-consumption at a reasonable rate, but also to undersell our jealous neighbours and rivals the French at foreign markets; which at present is not the case, owing to the dearth of negroes for labour, and of firing in our West-India islands: and the price of sugar is not a little increased, by its requiring so large a sum of money to settle a sugar-work, without any prospect of return for several years; it is true, it generally pays pretty well at last; but few are able to lie so long out of their money, in a country where the necessaries of life are so dear. A.

that they have in some of the islands scarcely left wood enough growing to supply their ordinary occasions.

This will not, I hope, be the case in our intended new settlements in East or West Florida: some tracts of land, best adapted to the growth of wood, should be sacredly kept near every township; and the several parts of this wood should be felled, for the use of the inhabitants, in such regular rotations, that by the time the last part was cut the first should be ready to yield a second crop.

I am sensible some will laugh at my fears about a scarcity of wood in any part of America, as there is such plenty of it; but of what use would thousands of acres of wood be to me, if it should be several miles distant from my plantation? and this will certainly soon be the case in every township that shall hereafter be settled, unless some previous caution is used.

But not to digress too much from the intended subject of my letter, I shall now give you some account of the culture of the cane in the islands.

By a very cursory view of a cane-piece, it may easily be discovered whether the owner is a man of reflection; for some are so negligent, as, after putting the cuttings into the ground, to leave them almost intirely to their spontaneous growth, giving themselves very little concern till they think the canes fit to cut and carry to the mill.

But what is the consequence of this their negligence? Instead of a rich juice, strongly impregnated with the salt, which afterwards granulates and becomes sugar, they are furnished with a raw, crude, unripe, undigested, and impure liquid, from which no sugar can be extracted but by long boiling; and, when it is produced, is of a very inferior quality and value to what is produced from canes that have received a more perfect culture.

Every plant requires a certain portion of freely-circulating air, and the active heat of the sun, to bring it to its natural maturity; and this necessary portion of either it cannot enjoy if the plants stand in their growth too near each other. The sugar-cane, to perfect its rich juice, requires more air

and more sun-shine than very many other plants ; the super-abundant moisture in the cane should, by the heat and dry air, be exhaled before it is fit to cut for the purpose of making sugar : this transpiration is so necessary, that if it is by any means impeded, the expence of boiling is almost doubled, besides the sugar being greatly lessened in value *.

The sugar-cane is propagated by cuttings, about a foot, or a foot and a half long, which should be taken from the middle of the cane.

When a proper number of the cuttings are procured, and the ground got in order, a furrow should be drawn with a plough from one end to the other of the land ; and at every three feet distance a single cutting should be planted ; then another furrow should be drawn at six feet distance from the first, and planted in like manner with cuttings ; observing that the cuttings of the second row be planted over-against the intervals of the first, in quincunx order ; and the same rule should be observed in the third, and all the rest of the rows, till the whole piece is planted ; and the pieces should not be made too large, or the carriage of the canes, when cut, to the mills, will be very inconvenient.

I am sensible many will exclaim that this is by much too large a distance to allow betwixt the plants ; but I own myself quite of a contrary opinion on many accounts ; for among all the various cane-pieces I have seen, those always yielded the best commodity, and the largest proportional produce, in which the canes had been planted at the greatest distance one from the other.

It is very easy to plant a cane-piece too close ; but it is scarcely possible to plant the cuttings at too great a distance : the only ill consequence that can result is a loss of ground, and that is, as it were, nothing when compared to the loss of a crop.

The lands in North-America, which I would recommend to be planted with canes, are fresh, strong, and very rich :
this

* Our correspondent's reasonings on this subject are very masterly, and well worth the attention of every planter and husbandman. A.

this is another reason why the cuttings should be planted wide ; for, were they not, the canes would be drawn up to an immense height, but would never, for want of a due circulation of air about their lower parts, ripen so as to yield a rich juice that would easily granulate and produce sugar.

The settlers in the southern part of the continent of America are already well acquainted with the methods of cultivating and preparing indigo ; and indeed it would be much more for their advantage would they plant the land first with indigo, which they intend making into a sugar plantation : the indigo, which loves a rich, mellow earth, and is luxuriant in its growth, would abate the rankness of the soil, so as to make it more proper for the reception of the cuttings of the cane ; and the crop of sugar would be more certain than if the cuttings were planted in the usual method in the fresh land *.

When the cane-piece is planted, it will be necessary to give the intervals frequent culture, as by that means the weeds, which in those climates grow apace, will be extirpated, and the young shooting plants will every stirring be supplied with a fresh stock of food, which will greatly forward their growth.

The time for planting is just before the rains set in ; and if the precautions above mentioned are observed, a cane-piece will continue yielding plentiful crops for twenty successive years.

I could, it is true, give some direction respecting the method of boiling the juice extracted from the bruised cane ; but this would be intirely superfluous, as it is not to be supposed that any man would venture on planting canes, and establishing a sugar-work, without much better information than I, or any other planter, could give him in the compass of a letter.

There

* This practice of planting indigo, to abate the rankness of the soil, carries with it every probability of success : we agree intirely with our correspondent in his reasonings on this head, and recommend the experiment to such of our readers as may have an opportunity of trying it. A.

There are certain general principles which may safely; and even profitably be adopted: these I have ventured to lay down. As to the *minutiæ* in the several operations, they depend so much upon particular circumstances and contingencies, that to make rules for their governance would be absurd and useless: they must be left to the planter; and a due observance of the advantages to be made of particular circumstances and accidents distinguishes the intelligent from the ignorant.

This letter is intended as a hint only to such of your readers as have connexions with our southern colonies: they may, if they will, improve it to their advantage; but they should be stimulated to serve even themselves.

I say they must be stimulated by some motives of immediate interest, or no canes will be planted in the continent: it is necessary, perhaps, I should explain myself a little. I could wish the Society would offer a large premium for the first sugars imported into England from North-America, made on some sugar-work established there: this would encourage our settlers to try the experiment; and indeed it can scarcely be called an experiment, as there is almost a certainty of success.

The attempt must indeed succeed, for I am just informed by a friend, who lived many years at Seville *, that in the provinces of Spain, which border on Portugal and Algarva, they cultivate the sugar-cane to great advantage; and it cannot but be acknowledged, that the climate of the southern part of the American continent is at least as well adapted to the growth of the sugar-cane as the south of Spain.

It is time for me to conclude, lest I should occupy more room in your work than belongs to me: the subject I write on is useful, but not perhaps in so extensive a degree as many other matters treated of by your correspondents.

I am, GENTLEMEN, your's, &c.

London,
Nov. 23, 1763.

A Corresponding MEMBER of the
SOCIETY of ARTS, &c.

* Madrid is supplied with large quantities of the best sugars, for its consumption, from the southern provinces of Spain. Sugar has also been cultivated to some advantage in the south of France. A.

NUMBER LXXVIII.

A Letter to the Editors, on a Method of feeding Horses with new Beans and Oats without Danger.

GENTLEMEN,

AS horse-meat of all kinds has been this winter very dear, I imagine the letter I am now writing will not be unacceptable to your readers: it is founded on experience, and will be found to answer in the practice.

I keep many horses, which cost me a great deal annually, and would cost me much more but for the secret I am now about to disclose.

Whoever has frequented the corn-markets in London, cannot but know that old horse-beans and old oats sell from ten to fifteen and more *per cent.* dearer than new corn; nay, I was the day before yesterday at market, and bought some new beans of this year's growth, thirty *per cent.* cheaper than old beans were sold the same day; and I also bought some new oats twenty *per cent.* cheaper than the old ones sold for.

The reason for this difference of price, in the same sort of grain, is pretty generally known: the horse-keepers know, that new oats are a watery food, owing to a crude humidity that abounds in them; and when given in too large quantities, they fill a horse with foul humours, besides making him purfy and thick-winded; and they are no strangers that new-beans will, by their abundant crudity, give a horse the gripes, and other disorders, equally fatal: many a good horse has been well and dead in the space of a few hours, by imprudently feeding him with new beans.

As this is the case, you will, perchance, be surpris'd that I should chuse to buy new beans and oats, rather than old, when the last, though dearer, are so much safer, and more heartening food; I will in a few words give you my reasons.

I thought

I thought several years on the subject, before I ventured to change the old custom; but, after very mature reflection, I imagined the only difference betwixt the old bean and that of the last year's growth was, that the first had, by a natural and gradual fermentation, thrown off its superfluous and noxious humidity: this being the case, I conceived that the effect of this fermentation (viz. the throwing off the humidity) might be by art, as well as by nature, produced, and that in a manner much more expeditiously.

I made several experiments in this matter, and at last hit upon the method I now practise.

I well knew that the beans might be dried by means of fire; but I was at the same time sensible this might, without some previous preparation, fix the noxious quality in the corn.

It was necessary then to excite the beginning of a fermentation in the beans, that the noxious humidity, being loosened, as it were, might the more easily be expelled by the heat.

To effect this, I fill a large tub with new beans, among which I pump as much water as is required to wet them: I let them soak for about ten hours, when I draw off the water, and lay the beans in a heap on a floor: in this manner they lie, being frequently examined, till they begin to heat; when I spread them out thinner, and moving them often with a malt-shovel, let them lie in beds till the germ swells, and becomes turgid: I then carry them on to a malt-kiln, and dry them gradually; and as soon as they are cold, they are fit for use.

The great nicety of this operation is to prevent their sprouting, or malting, which would injure them; and not to dry them by too quick a heat.

I prepare my oats much in the same manner, only there is no occasion to soak them in water: if they are laid in a heap, and some water sprinkled on them, so as to make them thoroughly moist, it will be sufficient, and they will soon heat: there is no necessity for drying them so much as the beans; that is, they do not require so much heat,

nor such a length of time, to dry them, as the beans do, owing to the difference in size.

I have no doubt, but that such of your readers, as chuse to make the experiment, will be well satisfied with the result; and they will, I will be bound to say, find that corn, thus prepared, will agree as well with their cattle, as any old corn they can procure at the markets*.

As to the expence of this operation, it is very trifling; and the larger the quantity prepared at one time, the less it is; insomuch that, all expences paid, they who follow my directions may have their corn, at least three, if not four shillings in the pound cheaper than they can buy any in the market fit to give their cattle.

If it is convenient, I should be glad to see this letter inserted in your next month's publication, as it is chiefly at this time of the year it can be of any service; for it is now that there is the greatest difference betwixt the old and new corn, in their respective prices I mean.

To write for the eye of the public is new to me: if the style therefore of this should not be quite so elegant, as that of some of the letters you receive, you must ascribe it to the true cause, and of course excuse;

GENTLEMEN,

Your humble servant,

London, Dec. 14, 1763.

But new correspondent,

A—M.

* As there is no great hazard, or expence, in this experiment, we recommend the trial of it to some of our readers, requesting they will favour us with the result; that, if the practice is salutary, it may become, by our recommendation, general; as it is, particularly in this metropolis, a matter of great moment. A.

NUMBER LXXIX.

A Letter to the Editors, on the Uses to which Carrots may be applied by the intelligent and industrious Farmer.

GENTLEMEN,

BLAME me not for wishing to rank myself in the number of your public-spirited correspondents. I see in your collection many hints which cannot fail being extensively useful.

Being willing to contribute my mite towards so valuable a work, I shall make the uses to which carrots may, by the farmer, be applied, the subject of my present letter.

And first I must mention, that nothing can exceed this root for fattening oxen*; but they should have some sweet hay to eat with it, and they will thrive much better on it if they are stalled. They eat it with great greediness; it nourishes them much, and soon makes them fit for the butcher; and if they are young beasts, they always turn out fine meat.

Some oxen will not take kindly to eating them raw at first: for these, it is proper they should for a time be par-boiled; but they must every day be less and less boiled, till they come to eat them quite raw, which in a little time the nicest beast will not be averse to.

I find also carrots excellent for encreasing the milk of cows, especially in winter-time, and early in the spring, when there is a scarcity of grass; and the milk they give when they feed on them has no bad taste; but the butter made of the cream is generally a little higher coloured, being a full yellow; yet this is no inconvenience, as it is not worse

* Much has been said and written in praise of this root, as being a very hearty food for most sorts of animals: it has even been asserted that one acre of carrots, properly planted, will fatten a greater number of sheep, or bullocks, than three acres of turneps, and that the flesh of these animals will be firmer, and better tasted. N.

worse in quality than that which is made when the cows feed in the summer-months on the sweet meadow-grass.

I have, as yet, had but little experience respecting the use of carrots in feeding sheep: it is true, I have fed a few on them, and they came on well; but whether they are more profitable, when applied to this use, than turneps, I cannot determine. The public would be greatly obliged to some of your readers, if they would make a fair experiment in this matter: the way to do it will be, to pick out of the same flock an equal number of wethers, if possible, equally thriving: let one half of these wethers be put to turneps, and the other half to carrots, being in every other respect managed alike.

Frequent observations should from time to time be made on their health; and when they are fat, it may with great ease be pronounced, which is the food that can with the greatest profit be given them.

If they are equal in their effects, the farmer must always govern himself by his convenience, and which ever of the crops best suits him, that he is chiefly to cultivate.

Many farmers sow turneps instead of fallowing their land for wheat; and this is good husbandry: but if the soil is proper for carrots, it would be much more profitable for the farmer to sow them, and that for these very obvious reasons; because they impoverish the surface of the soil less, extracting the chief part of their nourishment from a great depth; and as they require that the land should be deeper plowed, of course it will be in better tilth against the wheat-season, and be in much better order to receive that noble seed.

Hogs are very fond of carrots, and they make them thrive apace; but they should always be given to them boiled, as they will with great difficulty be induced to eat a sufficient quantity of them raw *.

U u 2

This

* There cannot be any better food for hogs than carrots.
N.

This food fills them speedily with flesh, and will very well make them much more than half fat: it will be proper however to give them, before they are killed, either a few bushels of barley-meal, or some grey-peas boiled: either of these foods will complete their fattening to admiration; though, for my particular part, I approve most of the peas, as they make the fat firmer, and waste less in the pot.

Were the hogs to have nothing but carrots given them when they were put up to fat, this root would, it is true, fill them up with flashy fat and flesh; but they would not spend so well; neither would they be so proper to pickle for pork, or to be made into bacon for keeping the whole year round.

I cannot help taking notice of one use to which I have applied this root, as it is quite out of the common road: I have fed dogs with it, and am morally certain that with the assistance of it a pack of hounds might be kept at a much cheaper rate than is now practicable with any other food.

I have not, it is true, experienced this, because I keep no hounds; but I have three brace of pointers, and six couple of cock-dogs, which I have for a whole year together kept on no other food but boiled carrots, some flet milk and barley-meal being mixed with the liquor they were boiled in.

Before I came into this practice, I always used to feed my dogs with either horse-flesh, or barley-meal: when they had plenty of the first, I ever observed that they were remarkably subject to the mange; and if my dog-boy could not for any length of time get the carcase of a horse, so as that my dogs were obliged to eat barley-meal alone, though they got flesh, the barley was of so hot a quality, that their coats would be quite rough, and stand an end on their hides.

Since I have fed them with carrots in the manner above described, I find, with pleasure, that the natural coolness of the roots abates the heat of the barley, or at least qual-

lives it; and my dogs are always in good order, high wind, and constant health.

This matter is well worth the attention of your readers, as many gentlemen might save large sums of money annually by putting it in practice. I find the use of carrots saves me, at least, three parts in four of the quantity of barley-meal I formerly used; and as to the skimmed milk, if it cannot be got in quantities at a very cheap rate, it may, without any very apparent difference, or bad consequences, be omitted.

Another thing, well worth the attention of your gentlemen readers, I shall now take notice of, which is, that they cannot find a better, or a more heartening food for their hunters, than carrots*, if given them with discretion: as to common plow, and cart horses, they may eat them indiscriminately; and this root will be found a very cheap food for them, as they need have no corn, and much less hay than they would otherwise eat.

I have a couple of hunters, which I value, as being very good horses; and these I feed in the season with very little else besides carrots, well cleaned from the dirt that naturally hangs about them, and loaves made of the mixed meal of barley and oats, sometimes with a small admixture of coarse, but good wheat-meal; and if they require to be loosened in their bodies, I now and then give them some bran. As to hay, they eat, at this season, but little of it, of oats none at all; yet they go through their work to admiration.

I have, all my life, heard it said, that carrots were exceeding good to make a horse long-winded; and some jockeys will, I have been informed, feed a broken-winded horse some little time with carrots before they sell him, when he may very well be passed off for a horse that is only a little thick-winded.

A horse-dealer, in my neighbourhood, when he buys a poor half-starved beast, if he has youth on his side, always
fats

* Horses are extremely fond of these roots.

fats him up with carrots before he takes him to market; and this practice he finds to answer well, as the horse is sooner got into good flesh with carrots than any other food; and they are besides wholesome, breeding in him no foul humours.

All the danger seems to be to the purchaser, who, if he imprudently puts the horse immediately to too hard work, is in a manner sure to break either his wind, or his heart; for as the horse was very suddenly got into flesh, his strength is not proportioned to his bulk, till he has been kept some time on dry meat, which will bring him about, and make him soon fit for any reasonable work.

That a horse thus fed should not be immediately fit for any hard labour, must not be used as an argument against carrots being a proper food for horses. It must be considered, that this man takes a half-starved horse, and gives him at once his fill of a nourishing food, in fact too nourishing, as it fills him with flesh faster than he can have time to gather strength. It must also be considered, that during the time of his being fed on this root, he is not permitted to take any exercise; by which means the free circulation of his blood is greatly impeded, and he must of course be the less fit to be immediately, and without previous caution, put to hard labour.

A horse, in this case, must have a superabundant humidity, which would by perspiration have been carried off, had he been permitted to have exercised himself moderately; but this being prohibited to him, though the humours whilst he is thriving continue as it were stagnant and innocuous; yet, when once set in motion by too hard labour suddenly given, they naturally become peccant, and shew themselves in different shapes.

I hope I have said enough to vindicate my favourite root from any aspersion *: I have found it very good
and

* Mr. Miller adds another use to which carrots may profitably be applied. He has, he says, known them cultivated for feeding deer in parks, which has proved of excellent use in
hard

and serviceable : as such, therefore, I cannot but in justice report it.

If this appears in your collection, I may probably again write to you.

GENTLEMEN,

Dec. 2, 1763.

Your very humble servant,
AN ESSEX FREEHOLDER.

NUMBER LXXX.

A Letter to the Editors, on the Benefit of laying up a Store of Turneps against the Winter.

GENTLEMEN,

I Perceive that a person, who signs himself an Essex Landholder, has written you a letter, Marked No. XLVI. on the culture of turneps : his method is, in general, the same I practise myself ; it must therefore, of course, meet with my approbation.

Yet, as this piece is intirely confined to the culture of turneps, without saying much about the spending of them, it gives me an opportunity of enlarging a little on this head, by way of supplement to your above-mentioned correspondent's letter.

I have, in my time, sown a great deal of land in turneps, and have applied them with great advantage to various uses ; but our chief reason for cultivating them in this county is for feeding and fattening sheep.

It is almost needless to say, that they answer this purpose extremely well : their use is too well known to all the eastern farmers, to be in these days controverted.

We

hard winters, when there has been a scarcity of other food : in such times great numbers of deer have perished for want, and those which have escaped have been so much reduced, as not to recover their flesh the following summer ; whereas those fed with carrots have been kept in good condition all the winter, and upon the growth of the grafs, in the spring, have been fat early in the season.

We have various methods of spending them : some fold their sheep on the land where the turneps grew ; I have done this, but it is not a method I approve of : however, for the benefit of such farmers as chuse to practise it, I shall give one caution ; which is, that they use wicker hurdles for folding their sheep, which will otherwise be apt to thrust their heads through the bars, and, tangling themselves, are by that means often killed in the night, to the great loss of the owner.

If, however, it should not be convenient to the farmer to get these wicker hurdles, but he should be obliged to take up with those made of reft stuff in form of a gate, let him then be careful, when he has set his hurdles, and staked and bound them tight, to pull up all the turneps that grow within two or three feet of the outside of the fold, and throw them over the hurdles for the sheep to eat within-side.

This will take away any temptation the sheep may have to put their heads through the bars, and they will, by that means, escape the danger of being strangled.

Every animal is fond of liberty : and though the sheep will bear confinement, perhaps, better than any other creature, yet whoever has seen them when first driven into the fold, must have observed that they naturally go round the hurdles to try to find an opening to get out at : by this means the turneps which grow near the hurdles are trampled on, dirtied, and spoiled. For this there is a very easy remedy ; let the shepherd only pull up all the turneps that grow near the inside of the hurdles, and all will be well.

I observed before, that I am not fond of giving my sheep turneps as they grow : I think it much the better way to have them pulled ; by this means they have an opportunity of eating the whole root, and my flock of winter-fodder goes much farther ; whereas, when they feed on the turneps as they grow, they generally scoop them out, and leave a hollow shell in the ground, which, though it may afterwards be forked up, the sheep will scarcely even by hunger be induced to touch, as it cannot but be soaked by the dung, urine, and dirt, from the feet of the sheep.

I find

I find it then the best way, to have my turneps pulled before they are given to my sheep; they go much farther, and do them more good.

But in this method there is one seeming inconvenience, which is, that in frosty weather, when the ground is hard, I cannot have them pulled; yet this difficulty is very easily removed, by laying up, at the beginning of the winter, a sufficient store of turneps, secured from wet, and not much exposed to frost.

I think it worth while to have a building particularly dedicated to this use, and find it answer well: it is built in form of a small barn, and boarded round.

In the beginning of the winter, before the frost sets in, I have a large quantity of turneps pulled, and the dirt is carefully scraped off them; and, after cutting off the heads and tap-roots, I cause them to be regularly laid in my store, with this caution, however, that all round the sides next the boarding my men lay straw, to keep out the frost. The heads, or tops, I give to all my cattle in general, as they are cut off; by which means I, in fact, suffer no loss *.

I find these stored turneps a happy resource when hard weather comes on; then I open my repository, and deal them out to my sheep in such a manner that there may be no waste; and as soon as the weather breaks, and the earth becomes less hard, I resort again to the fields, and have them pulled as usual.

For some years I had another manner of storing my turneps, which was by digging a deep pit in a sandy, dry field, which being filled with turneps, they kept there very well; yet, as this method was subject to many inconveniencies, I left it off.

I have discovered another use for the turnep, besides feeding my sheep, oxen, and cows with it, which I must mention before I conclude this letter. I find it agrees

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X x

remark-

* This method is doubtless a very good one; we therefore earnestly recommend it to our readers. O.

remarkably well with hogs, which will eat of it greedily, and thrive on it apace.

I have several times tried this, and have often killed fine young porkers that had for many weeks eat nothing but turneps boiled in swill, or wash, till they were tender.

I have at other times given turneps to large hogs, that have been put up to fatten, in order to their being killed and salted for family use; and here I was not disappointed in my hopes; they always came on well: but I made it a custom to give them, for a week or two before they were killed, a few bushels of boiled peas, in order to harden their fat, that it might not boil away in the pot *.

I gave them boiled peas rather than raw, because, having been long used to eating the soft turnep, I found they did not afterwards take kindly to the hard, raw pea.

Hogs may easily be brought to eat raw, unboiled turneps; but it is much better to boil them when the hogs are to be fattened; for, though they will eat enough of them raw to keep them in tolerable good plight, yet they will not eat enough to fatten them apace.

I cannot better finish this epistle than by assuring you, that I approve much of the pieces you have already published: their utility stands confessed, and the great variety of subjects they treat on cannot but make them very agreeable reading to a lover of nature. Let me beg you will believe me,

GENTLEMEN,

Norwich,
Dec. 2, 1763.

Your grateful admirer,
C. K.

* If hogs will thrive so well, as our correspondent seems to say, on turneps, it will be a profitable acquisition to many poor people, who have it not in their power to purchase much corn.
N.

NUMBER LXXXI.

A Letter to the Editors, from a Member of the Society of Arts, &c. recommending Mr. Rocque's Method of cultivating Lucern, in preference to Mr. Miller's.

GENTLEMEN,

I OBSERVE, in your last month's publication, a letter, marked No. LXVIII. (page 301.) in which your correspondent, after a word or two in recommendation of lucern, refers your readers to Miller's Gardener's Dictionary for information with respect to its culture.

I allow Mr. Miller to be a sensible man, and that the world is much indebted to him for his labours; but it is impossible he could experimentally know the advantages of every method he has recommended: he must have very often depended on the report of others, and was of course liable, in some points, to be deceived.

That this was the case, with respect to what he says of lucern, I will not take upon me to say, as I imagine the method he has pointed out is the best that came to his knowledge.

The Romans knew nothing of the drill-husbandry; yet their *medica*, the modern lucern, gave them large crops, and was in very high repute. Did we know their methods of cultivating this plant, we should, in all probability, meet with the same success they did.

I own I am as little for innovation in matters of husbandry as it is possible: it is very difficult to bring any, the least variation from the old methods into practice*; how much more so then must it be to bring into use methods intirely new?

X x 2

I ap^e

* This is a melancholy truth, which every intelligent practical farmer can abundantly testify from every year's experience.

I approve of the new culture, when applied, under proper restrictions, to corn and pulse; but I own I think it quite preposterous to extend it to the artificial grasses. The only benefit lucern can receive from being planted in rows with intervals, is, that the frequent stirrings of the horse-hoe will keep down the natural grass, which is very apt to hurt this crop; but this may be effected by other more easy means.

I know it will be urged, that the new husbandry will supply a small number of plants with so much nourishment, that they will be equal in weight and quantity to a much superior number of plants which had not the benefit of that culture. But is this, in the present case, an advantage or a disadvantage? I think rather the latter, and that for this plain reason.

I will readily allow, that as heavy a crop of lucern may be got from an acre of land in the drill-husbandry, as in the method I shall hereafter lay down, as now practised by Mr. Rocque, of Walham-Green, who has, I believe, brought the culture of this plant to greater perfection than any preceding planter, and has made more profit from the same quantity of land*; yet I think this allowing a great deal. However, the advocates for the new husbandry, when applied to artificial grasses, must confess, that it is more expensive than the method practised by Mr. Rocque; and they must also confess, that though their crop may be as heavy, it will be of a much coarser quality, as the stalks will be larger, more sticky, harder, and more disgusting to the animals when given to them in hay: on the contrary, the lucern raised in Mr. Rocque's method is large enough to yield a full crop, yet by no means sticky; and the cattle eat it with as much greediness as the Romans describe their cattle to have done the *medica*.

Mr. Rocque lays it down as a maxim in his practice, that lucern will grow on any soil, provided it is not so wet as to rot the roots.

The

* See the piece marked No. LVI.

The strongest land is however to be preferred, and the deeper the soil, the better will be the crop, as the roots will have room to extend themselves.

The land should be prepared in the same manner as for barley, being plowed, harrowed, and cleaned from all sorts of weeds; and the stronger the land is, of course the more plowing and harrowing it will take to mellow it, sweeten it, and bring it to a fine tilth.

When this work is done, the lucern seed must be sown broad-cast, (not in drills) in fine weather, after the rate of about fourteen pounds to an acre.

This allowance of seed will be sufficient to supply the number of plants that will be wanted to yield a full crop; but they will not stand so thick as to starve one another, though there is some allowance for part of the seed failing *.

But should every seed take, the method of culture hereafter recommended will sufficiently reduce the number of the plants, and, without the trouble and expence of the new husbandry, give each plant space enough to extend its roots, and collect the necessary quantity of nourishment.

To return to the culture, before the last plowing, the land should be manured, not with old rotten stuff, as is usual; but with fresh stable-dung, that has been thrown up in a heap three or four weeks to heat and ferment. This will enable the young plant to push forth its leaves and stalks with luxuriance, and get forward in its growth the first summer.

When the dung is in full fermentation, it is to be laid on the land, and plowed in as soon as possible, that the salts of the dung may not have time to evaporate: the land must then be harrowed and sown, and afterwards
again

* Let land be sown with what crop it will, some allowance should be made for the failure of seed: if it is a crop that requires hoeing soon after it comes up, like turneps, &c. it may easily be thinned, and the plants set out to a proper distance: the loss of seed will not be great. N.

again harrowed with a light or bush-harrow; and, lastly, rolled to settle the ground and break the clods.

If corn is to be sown amongst it, it should be only half a crop; otherwise it will be apt to destroy the lucern, especially if it proves a wet season, and the corn is rank: but if no corn is sown amongst it, the lucern will thrive much better.

Lucern may be sown from the beginning of March to the end of May; but April, in dry weather, is the best time.

If much rain falls on the new-sown lucern, it will be apt to swell too fast, and burst; but if it holds fine three or four days, it will be in no danger.

Mr. Rocque does not approve of drilling the lucern, because the roots are too much confined in the drills: they say it is to clean the lucern between the rows that they drill it; but it is for want of knowing the nature of lucern, and it discourages people from sowing it, drilling and hoeing being very expensive ways; the quickest and cheapest, and by much the best way, being to sow it broad-cast, like clover, as the roots will stand nearly at equal distances one from another every way.

Lucern requires, it is true, a great deal of nourishment from the earth; but there is no occasion this nourishment should be supplied by the surface. It is well known that the roots of lucern will run to a great depth in the ground, from whence they must of course extract a large quantity of food: this spares the surface; and in fact the land where lucern grows, requires only that the natural grass should be prevented from getting to a head, which it is in our climate very apt to do; and if let alone would soon choke up the lucern.

It is mentioned above, that if corn is sown with lucern, it should be only half a crop: some of your readers may not, perhaps, readily comprehend the meaning of this expression; therefore, to render it more clear, I shall here observe, that when barley or oats are to grow with lucern, a bushel only of either, according to Mr. Rocque's method;

thod, is to be sown first on an acre, then fourteen pounds of the lucern *.

One thing is to be observed; that if the corn, notwithstanding its being sown so thin, should grow so rank as to endanger the lucern, it will be much best to mow it before the harvest, as it is better to lose the crop of corn than to kill the lucern.

The barley, or oats, however, need not be intirely lost, as they may, when mown, be given green to cattle; or, if the weather is fine, will make excellent hay, provided they are properly dried; and it is best to do it in the swarth, as the rich juices are in that manner less exhausted. To sow it later than May is dangerous, for fear of a dry season, or its being eat up by the fly.

Lucern will not grow on fresh-broke-up land; it must be tilled a year or two: peas and beans, for one year, will prepare the ground; but, above all, potatoes excel for sweetening and mellowing of land: the next season a fallow for turneps; and when the turneps are fed off with sheep, it will greatly enrich the land, which should then be prepared for lucern.

In regard to the tillage, and time of sowing the lucern seed, the nature of the soil must be considered. Heavy strong land will require more plowings and harrowings, and to be later sown; light land will need fewer harrowings and plowings, and to be sown earlier, that the young plants may have strength to send their roots deep into the ground, before the hot dry weather comes on to hurt them; and if, for the first time, the land had a trench-plowing †, it would be of great advantage.

In

* See the latter part of the piece marked No. LXVI. p. 298.

† A trench-plowing is when the plow goes twice in the same furrow; the first time a shallow furrow, to turn down the weeds; and the second time you are to go as deep as you can, to turn up fresh mould, and to make room to bury the weeds the deeper. This serves two good purposes; one is to bury the weeds deep enough to rot; and the other is, that it makes your staple deeper, whereby the roots will run down the sooner out of the reach of dry weather; and if the soil, that is turned up, be ever so sour, the future plowings, harrowings, and manuring, will sweeten it sufficiently for the reception of the seed.

In Languedoc they sow no corn with the lucern; and when it is six or seven inches high, they mow it; by which all the seeds of annual weeds are cut off and killed.

In Normandy, the climate being much the same as in England, they sow corn with it.

In Picardy, and about Paris, they sow it, some with, others without corn.

At Avignon, when their lucern begins to decline, they manure their ground and plow afresh, and sow it with corn and lucern; and the old roots, growing again with the seed, make another fine crop: the plowing will not hurt the old roots.

If a full crop of barley is sown with lucern, and the barley grows very strong, the best way is to mow the barley when it is in the ear.

If forward peas are sown on new-broke-up land to prepare it for lucern, it may be done in one year, and turneps sown on it as soon as the peas are off: the turneps may be fit to feed off by Christmas; and as soon as the turneps are off, the land should be plowed, and lie fallow till a proper time to stir it again; or it may have a trench-plowing, as before directed.

This method of giving land a trench-plowing, to prepare it for lucern, is much to be recommended, as it stirs the earth almost as deep as if it was dug with a garden spade: of what advantage this must be to a plant that sends its roots deep for nourishment, need not be mentioned, as it cannot but be obvious to every reader.

Was labour cheaper than it is in England, it would doubtless be much the best way to dig by hand all the land that was destined to lucern: many advantages would result from this method of tillage, and particularly the weeds and grafs would not be so apt to grow as in plowed land.

I would heartily recommend it to some of the gentlemen in Ireland, to sow with lucern some of their land that has borne a crop of potatoes: it could not fail succeeding, and they would have a fair opportunity of trying what crops this plant will, when best cultivated, yield *. I can-

* We heartily join our correspondent in recommending this experiment to the gentlemen of Ireland. N.

I cannot but think, that on good land that had borne potatoes, there might be five good mowings in a year, particularly in Ireland, where the climate is rather milder than in England; and this without injuring the roots. An easy experiment would, however, soon make this matter known: I therefore heartily recommend it to the attention of your Irish readers; they are every day improving their lands, and will, doubtless, not suffer this hint to pass unnoticed.

When we consider the many advantages resulting from the culture of this plant, it is astonishing that it should so long escape our regard: the hint was given us by the Roman writers on the subject of agriculture, but we were too much attached to old customs to improve it.

In hot summers the seed may be sowed in England, but not from the first growth; that being generally too rank, and subject to rot at bottom.

In Languedoc they save it from the third growth; but as this climate is colder, it will not have time to ripen, unless saved from the second growth.

A dry soil is best to save the seed upon, as it is not so apt to grow rank; and then it may possibly do from the first growth.

As lucern, if the land is good, will bear several crops in one year, like clover; what Mr. Rocque means by the first, second, and third growths, are, he says, the different crops it produces in one summer, which are three, four, and sometimes five mowings*, in case no seed is saved from it; if seed is saved, it must be from the second growth: the seed will be ripe in September, and must be gathered by hand.

When the plants are one year old, it will be proper, with a large harrow, to go over your land as often as is sufficient to root up annual weeds and grass.

The harrow will not hurt the lucern, the roots of it being very tough: this must be done in dry weather, before it

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Y y

begins

* Mr. Rocque, however, does not in general approve of its being mown five times in a summer; as the plants are apt to bleed too much, and this damages the root.

begins to sprout, which is very early in the spring, that the weeds and grafs may die ; and if there are any patches of ground where the seed miscarried, a little seed must be sown, and the spot harrowed *: a dressing with rotten dung, at the same time, will repay the expences of it by a larger crop : if the harrow should cut or wound any of the roots, they will sprout and grow notwithstanding.

The second spring, after sowing, it will be proper to plow the ground, where the lucern grows, with a drill-plow, with a round share, without a fin or feather, and without a coulter, to prevent the roots being too much hurt. It should lie rough a few days to dry and mellow ; then, in fine weather, be harrowed down, to mow it the clofer.

One, not used to the culture of this plant, will be apt to think, that plowing will destroy the lucern ; but any gentleman, that will take the trouble to call at Mr. Rocque's, may be convinced that experience teaches the contrary.

To make hay of lucern, it should be mowed as soon as the bloom appears, or rather sooner : it must not be spread, like common grafs, but lie in the swarth, like clover, and turned in the same manner ; or the leaves, which are most nutritive, will drop off †.

If suffered to stand too long before it is mowed, the stalks will be too hard for the cattle to eat it, and it loses much of its goodness.

The hay is good for all sorts of cattle ; and when horses are fed with it, they should not have their full allowance of corn ; the lucern answering, in a great measure, the purpose of both corn and hay.

It is also the most profitable of any sort of fodder to feed horses with in the summer, by mowing and giving it to them green.

If

* If the weather should be very dry, it may not be improper to give these spots, after sowing, two or three gentle well-timed waterings ; always remembering, that too much wet destroys the seed. R.

† It should rather be suffered to wither by degrees, than be dried by too sudden and scorching a heat. N.

If the land is good, the produce is incredible ; and according to the goodness and depth of the soil, so will the crops be.

Mr. Rocque says he has seen lucern mowed five times* in a season ; yielding, at the first mowings, nearly eight loads of hay *per* acre.

The spring plowing amongst the lucern must be annually repeated : it kills the grass and weeds, and makes the ground ferment, which promotes vegetation ; and the oftener it is refreshed with a little dung on the surface, the better it will pay for the trouble of cultivating it. If the dung is laid on before the winter, that the salts may be washed in by the rain and snow, and plowed in, in the spring, it will greatly add to the profit.

This is the substance of Mr. Rocque's account of the culture of lucern ; but as different sorts of soil may require different methods of tillage, he has subjoined the idea of a harrow, with two handles like a plow, which may serve in light land instead of the plow, and will save some labour.

The teeth must be set at seven or eight inches apart in the first row, and about five inches long without the wood. The second row must be placed nine or ten inches behind the first, and so that the teeth of the second row may be against the spaces of the first row ; and they must be an inch longer than those in the first row, so that the ground, being loosened a little by the first row, the teeth of the second row may go something deeper ; and the teeth of the third and last row must be an inch longer than those of the second, and placed so as that they may go in the same tract with the teeth of the first row.

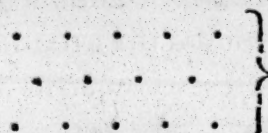
The harrow must be made of one solid piece, four or five inches thick, and the lower side must be rounded off towards the hinder part where the teeth are longest ; whereby the person that holds it by the handles, pressing down a little,

Y y 2

may

* Let it be remembered, that five times will, in general, be too often to mow it in one season ; three times will be sufficient, being best fed in spring and autumn. N.

may force the second and third rows of teeth deeper than the first; and, by bearing up a little, he may prevent any but the first row from working. A very little practice will be sufficient to make any one use it as occasion requires; and it will be so steady that no unevenness of the ground will be able to throw it out of its work, as a clod or stone will a common harrow.


 The manner the teeth are to be placed in

Let it be remarked, that the foremost row of teeth are placed in a line across near the middle of the block or plank; the other two rows behind that; and the fore part of the harrow should be heavier than the hind part when the weight of the harrow is suspended on the first row of teeth. The teeth should be pretty strong, and round; their being square, as usual, may hurt the roots a little, which is to be avoided as much as possible, though the consequence would not be very great.

By what has been said, your readers will easily conceive that the above method, recommended by Mr. Rocque, on his own experience, to all who consult him on the subject, is very different from that laid down by Mr. Miller, in his *Gardener's Dictionary*; and what will make it well worth attention is, its being no ways essentially different from the old method of husbandry.

Farmers are fond of sowing broad-cast, it being no easy matter to make them comprehend the utility of a drill-plow, on any occasion: the sight of so complicated an instrument terrifies them; they think it moves by clock-work: and as to the labourers, it is a very difficult matter indeed to get them to hold it.

I am fully sensible, as I have already observed, of the good effects of sowing corn and pulse regularly with intervals, but cannot approve of this method when applied to artificial grasses; and it would be well if we were to improve our old practices, before we should even attempt to bring the new methods into general use.

To

To practise these methods with any prospect of success, a man should know something of the theory of vegetation; which few farmers do. Let, therefore, the gentlemen on their demesnes shew the good example; let them see that their lands are properly cultivated; and if the methods they use are attended with success, the practical farmers in the neighbourhood will, prompted by a view of gain, be ready enough to imitate. I am,

GENTLEMEN,

London,
Jan. 7, 1764.

Your humble servant,
A MEMBER of the SOCIETY.

NUMBER LXXXII.

A Letter to the Editors, from a Paper Manufacturer, recommending the Use of Woollen Rags, reduced into Flocks, as a Manure.

GENTLEMEN,

I TAKE in your papers on agriculture, &c.—the design I greatly admire, and hope you will meet with the encouragement it so well deserves.

Herewith you have an hint, which if thought of any service to the public, am certain room will be made for it in your valuable repository.

Woollen raggs * are well known to be an excellent, lasting, manure. The common method (I think) is to make a dunghill, &c. &c. of them †.—I am persuaded,
from

* Any animal substance is good manure, and woollen raggs have, by frequent experience, been found to be particularly so, as being not only part of an animal, but they are also supposed to be strongly impregnated with animal *effluvia*, by being used, perhaps, for years before for cloathing. N.

† Woollen raggs are often chopped very small, either by an engine, or by hand, and afterwards sown on the land: this is a very good way; but if any speedy effect is required from this manure, we join with our correspondent in thinking that the best way is to reduce them into flocks by means of a paper-engine. N.

from experience, that reducing them into flocks in a paper-engine (which a person not having the conveniency of having worked by the force of water, may have one worked with an horse) renders the article much cheaper, as a small quantity, when reduced to flocks, will be sufficient for an acre, being then, as it were, sown; consequently it goes much farther, the manuring is more regular, and will answer, I am certain, exceeding well.

I flatter myself that I shall often be entertained with many subjects on dying, which I am inclined to believe is greedily desired by many.

I am a manufacturer of paper, and if I thought that I could be of any service (*pro bono publico*, as Mr. Henriques says) I would send you a line or two * on the subject, and am,

Dec. 24, 1763.

Your most obedient,
E. D.

* We are greatly obliged to our correspondent for his kind offer of assistance, and should esteem it a favour if he would give the public his sentiments on the following heads.

1. By what means could the materials for making paper be reduced in point of price, and augmented in quantity?
2. Might not other materials, as proper as those now in use, be discovered and pointed out?
3. If the materials were more plentiful and cheaper, would there be any occasion to import paper?
4. Why cannot we make paper as good, and as cheap, as that made in France, for the use of the copper-plate printers?
5. Why cannot we equal our neighbours the Dutch in this manufacture?
6. Why are not papers, in general, as good now as they were some years ago? and is it owing to any increase in the consumption, and of course in the demand, so that they are made with less care, and worse materials?
7. Do not the manufacturers strive to out-do each other in making a cheap, rather than a good commodity?
8. As paper, particularly that used by printers, should be durable, will not some bad consequences hereafter ensue from the present imperfect method of making it? Should our obliging correspondent be kind enough to answer all, or any of the above questions, other matters equally interesting may probably occur to his recollection. N. A. R.

P. S. I think that a dunghill made with a layer of dung, lime, earth, and flocks, would be an excellent compost *.

NUMBER LXXXIII.

A Letter to the Editors, from Mr. John Irwin, on the Nature and Culture of Potatoes in Ireland.

Reficit Industria, et ditat.

GENTLEMEN,

THE potato is become a root of such immense utility, especially to the poorer sort, within this century, that too much, methinks, cannot be said towards improving, and extending the culture of it †.

In Provence, Dauphiny, Switzerland, and several other parts of Europe, and even in America, it yields commodious, abundant relief to the more indigent, as being easily and plenteously propagated in almost every kind of soil.

In Ireland particularly it is the principal food of the poor during the greater part of the year, without which, since the late unproportionable rise of lands in that kingdom, to the

* We agree with our correspondent that this would be an excellent compost, provided it was suffered to lie a considerable space of time to ferment and meliorate, and was at proper intervals turned. It should be observed however, that the nature of the earth mixed in this compost ought to be as opposite as possible to the soil it is to be laid on: if on a clay, sand should be mixed with the compost; but if a light porous soil is to be manured, clay should make a part of the composition; for the manure is supposed to act as a corrector, as well as an enricher of the land, which stands in need of it: some soils, in fact, want correcting only, being in their nature replete with vegetative salt, yet, through the compactness of their parts, improper, whilst uncorrected, for the supplying of plants with the necessary food. N.

† Such notes, to this piece, as are distinguished by the signature IR. were added by Mr. Irwin, before it came to our hands. R. N. E.

the trade of it *, they could not well subsist. And, indeed, it seems a particular favour of providence sent to them on this account.

In times, not very remote, lands were cheap there, and the peasantry, consequently, lived on nourishment somewhat more luxurious, and diversified: their labour also was less burthensome. But now, being obliged to work hard at four-pence and six-pence a day †, and their rents considerably augmented, it will not seem surprising that this root alone has become the staple of their support, and that they have been the first people in Europe, or, perhaps, in the world, that have led the example in an extensive improvement of it. This may *naturally* be supposed to arise from *close-pressing* necessity, the most cogent and inspiring of all motives.

In truth with much reason; for a poor labourer, in that ill-fated country, is driven to seek his sole refuge for subsistence in this root, from the inexorable imposition of a hard-hearted landlord, (sorry I am to have it to say, too many of them *grind* the poor ‡; but hope it will not be long the case) who thinks he cannot get too much for his land out of the persons, or purses, of his dependants, and who hath so inverted the old customs, that a hewer of wood, and drawer of water, (and many of these perhaps descendants of former proprietors) can afford himself but a miserable scanty platter of potatoes, seasoned with a *palatable* grain of salt, and washed down with a draft from the next rivulet, to support the fatigue of thirteen hours (*statute quantity*) of unceasing labour, about his *ancient* mansion-house,
or

* It is, indeed, surprising to think how some farmers contrive to pay their rents; many farms, which used to let for seven shillings, and eight shillings an acre, not many years ago, are now rented at fourteen, sixteen, and even seventeen or eighteen shillings an acre. N.

† In and about Dublin, common labour is from ten pence to eighteen pence *per* day, or nearly thereabouts. IR.

‡ Otherwise, oppressing the indigent, or lower class of people; a vulgar expression in Ireland. IR. To grind the faces of the poor is also, in England, a common expression. R.

or in his *elegant* gardens, *well-laid* out closes, or *refreshing* bog-holes *.

If such simple living was the diet of our first ancestors, (as reported) how much are they to be envied for the healthfulness of it, in comparison to that of our over-gorging, luxurious times ! Or, if such be the condition of a province, speak, oh ! Ireland, how happy thy lot to be annexed to Britain ! by which, at least, if thy poor have not full meals, they have healthy ones, *liberty*, property, *independence* ; and, in imitation of their elder sister, they may possibly soon run a madding into riot and licentiousness : the sweets of liberty neither perhaps comprehend.

But to quit invidious comparisons, (which the present poor *Corficans* might as justifiably make on a similar occasion—) and return to our purpose,

The potato is a root, a little of which is very filling, quickly appeasing hunger ; but by no means a lasting solid nourishment for a labourer, as evidently testify the squalid looks of numbers of the poorer Irish ; though at the same time it is in general wholesome, agreeing with most stomachs that can vary their food ; but, like other pro-

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ductions

* I have heard many of the poorer Irish complain of this wretched diet as long as I can remember. But as the country is naturally fertile, it is to be presumed, in another century, husbandry will be so improved there, as to have beef, pork, pulse, bread, &c. as plenty as in England. By the means of taking *con-acres*, otherwise *oat-soil*, which their own labour, and that of their wives and children, in spinning linen and woollen yarn, enables them to do with great difficulty, they afford themselves now and then a little oaten bread, (a great dainty with the poor souls !) and this they find refreshes and invigorates them much. If with this they can compass the milk of a cow or two, it is but what the smaller part of them can have, grazing being greatly risen on them of late years, and very immoderately so, even unproportionably high, as the lands have been risen by the chief, or head landlords. As to wheaten bread, which is now in plenty in most countries of Europe, they scarce know any thing of it. It would be too great a dainty for them (as their landlords imagine) though almost as easily procured as oat bread.

IR.

ductions of the earth, forbid in many cases by the medicinal tribe *.

It is however very favourable to population; for in the western parts, especially, of Ireland, it is common to see six, eight, ten, and sometimes more children, the issue of one couple, starting almost naked, preceded by two or three cur-dogs, out of a turf-wall hut, or cabin, to behold the traveller, or any other incidental cause of curiosity.

The poorer sort being generally faithful in wedlock, these children are, for the most part, born uncontaminated by our modish London and Paris disorders. Health is streaked over their roseate cheeks, like the beautiful tinge of a summer's morning; their limbs are robust, and somewhat clumsily shaped, in this differing from the American, but far exceeding him in a fine complexion. This however, to the great detriment of the kingdom, is soon destroyed by the smoke of their barbarously-constructed cabins, there being no outlet for smoke in them but the door; otherwise, we might well presume, the female peasantry of that country would be, at least, as handsome as they are in England †. Nay, as it is, London can witness, there are exqui-

* Mr. Ellis, and others, give very just accounts of the healthy, nutritive qualities of this invaluable root; but had he been obliged to live intirely on it at hard labour, as most of the poorer Irish are, he would have often found occasion for the addition of a little bread, beef, and other more substantial aliments to enable him to get well through the fatigue of constant work. It being now become a natural food to Hibernian stomachs, and an antiscorbutick, it consequently frees them, in a great measure, from that consuming disorder; but when too much used, or principally so, as is the practice in that country, I am apprehensive it promotes dysenteries, defluxions, and all phlegmatic disorders, to which, though generally a thin *lean* people, they are much subject; and in this it is assisted by the natural moisture of the climate, occasioned by its vicinity to the great Western, or Atlantic ocean; and not so much to the bogs, and marshy grounds, as is the vulgar erroneous opinion. It may well agree with the opulent, because it is capable of many palatable, culinary improvements. IR.

† The Irish cabins, or huts, are in the western parts continually involved in smoke; those in the counties immediately about

exquisitely beautiful ones of them, rescued every year from the certain destruction of the smoke, and bad provender.

These

about Dublin are not so much so, being somewhat better constructed. The smoke must be very destructive to the skin. I made my observation on several of both sexes, and different ages, who resided constantly in my neighbourhood in huts; and I found the alteration in hue, and cutaneous freshness and smoothness evident, even in those aged from twenty-five to forty. Some of them looked as shrivelled, parched-up, and worn, as if they had been fixty. Add to this the smoking of tobacco, which is universal amongst them, and a great drier: they are nevertheless very subject to defluxions of all kinds. This physical cause it is that spoils the external look of half the country wenches of the kingdom, the pungent quality of the smoke acting more powerfully on the softer and more delicate texture of their skin; whereas the men are not so soon affected by it, from the coarser grain of theirs. Besides, the constant exercise which pushes out the grosser humours, and not being so much in doors, as the females, saves them a while longer from the pernicious effects of it. The poor are the more careless about the construction of their cabins, which causes this eternal cloud of smoke, on account of an evil custom much prevailing. When a poor man comes to live with a gentleman farmer, or other renter of land, he commonly brings what he calls his house along with him. This house is no more than a few miserable sticks of very slight girthing, which serve for the roof: any deficiency, necessity obliges him to supply from the next neighbour's grove. It happens, perhaps, soon after, in the course of sublunary events, that he gets warning from his master to quit his service (the usual times are in November and May): the poor fellow desires his house may be let with him; but this request is generally denied, for no other reason, that I know of, but to let the house tumble down on the premises. The masters, indeed, retain them to put others into them; but the poor are sometimes superstitious in this respect, and rather build themselves a new cabin than succeed their neighbour in a dry seasoned one. From hence we may easily perceive why the smoke happens to be so detrimental to the poorer natives. It is certain, were they sure to remain (and none of them are sure of any term except they have leases) but six months in a place, they ought, by a proper construction of their cabin, to ward off the smoke for that time, which they might do at a most trifling expence; but their being in a state almost like the wandering Arabs,

These children, that look thus healthily, are fed by the fond parents, for about the first ten years, with the best the cabin can afford: if there be a little milk, butter, oaten bread, pulse, or meat, a good part falls to their share; but when they become more adult, they must share in the chance of the potatoes, salt, and cool spring, as before mentioned. From this short sketch, which is a true one, but not near so full as the subject would admit, though not the limits of a letter, we may easily perceive the great benefit of the potato to Ireland; that it is not less wanted there, than well cultivated; it seeming in a manner to have been created for that climate, in which it thrives so remarkably well; and in which branch of agriculture the natives are so superiorly skilful. — Let us now proceed to their methods of cultivating it.

There are several ways of breeding potatoes in Ireland, which partly arise from the difference in soil, and kinds of seed. The different soils for this purpose in use in my neighbourhood, for about twenty years past, and which, I believe, are pretty general, are the following, wherein they are abundantly propagated, *viz.*

First, On rich clay land without any manure, vulgarly called grass potatoes.

When a lease is near being expired, that is, during the last seven years of it, if there be no covenants grounded on the statute against waste, &c. the tenant, finding no hopes of a renewal, sets considerable tracts in this way, where the soil will admit of it.

Secondly, On good ley land well gravelled, (otherwise sanded) which ought to be done a year before planting. But the poorer sort, who are the chief cultivators of this root,
are

causes in them great inattention in this respect. I have hinted this to many of them, and prevailed on several to become more orderly and neat in their dwelling; observing to them, that if they happen to have a few pounds of butter for sale in autumn, they can scarcely sell it on account of the smoky taste, which is intolerable. IR.

are obliged to sand and plant at the same time, or nearly thereabouts ; which is very destructive to themselves, their potatoes not having the proper benefit of the manure ; at least one part in three of the return are on this account exceeding small, and are from hence called *poræns* by them, being a diminutive expression. Whole fields are set in this way *, (commonly called *spaddane*, as I noticed in a former letter) in which a considerable trade is driven ; especially in the provinces of *Munster* and *Connaught*.

Had it been properly and moderately done, it would be a fine preparation for the increase of corn, and the laying down and bringing in, or, in other terms, the reclaiming of land ; but the poor do it so negligently, and mangle it so intolerably, having but a short temporary use in it, besides paying near double the worth for it, that this manufacture, which might otherwise be of considerable benefit to Ireland, is, as now carried on, rather the contrary ; both which I may have occasion hereafter to prove in some future letters to you.

Thirdly, On ground previously gravelled (that is, perhaps six months before) and dunged at setting time. There is but little done in this way, except by the gentry, and renters of land for their private use ; it being as yet out of reach of the peasantry, unless in a few instances.

Fourthly, On the ley with dung alone. Marle is not in use in my neighbourhood, though there is plenty of it in several parts of it ; therefore cannot yet inform you how it would do for the potatoes in that district. As to potatoes set in the ley with dung alone, this manufacture also is done, as you may judge, mostly by the more opulent. I have, however, often seen large fields set in this way to the public ; but it is not of late years so much the custom, this sort of land being commonly kept for grazing : this hurts the land ; and any preparation out of the ley for potatoes will, if not previously gravelled.

Fifthly, In arable or stubble land (vulgarly called *sticking* or *thrusting of potatoes*, because they are sown with a stick, pointed

* See Number II. p. 8.

pointed at the end, about an inch diameter, and two feet long, with the *loy* *, (otherwise the Irish spade, as I will more fully explain in the sequel.) In this method dung is also used, which shall be noticed *in loco*.

These are the most general methods that now occur to me, or I believe that are in use. There are, however, some others arising from the quality of the seed, practised only by the curious, in which the plants are put down at nine or twelve inches asunder every way, in little hillocks, (like the hop plant) as practised in several counties here in England; and, if you land them at certain proper stated times while vegetation continues, you will have a handsome nest of large oblong potatoes at every landing.

I made the experiment of one sort in my garden; and out of half a dozen potatoes cut into several pieces, each having an eye, I had, to the best of my remembrance, without exaggeration,

* The iron part of the *loy*, or Irish spade, is not quite half so broad at the edge as the English garden spade: it is about a foot or sixteen inches long, gently decreasing to about one-third of it from the edge, and the same way increasing to the top, where (being lapped about two inches over along the back or undermost sides) it forms a sort of conical socket, in which it receives the tree, always made of ash, which fills it up and rises wider about three or four inches higher than the iron: here the handle rises from the left side (so as to admit the foot intirely on the right side) to about three feet and a half high, without any eye on the top, as on the English spades. With this instrument they dexterously perforate that, in general, stiff, or gravelly soil, which with the broad-edged spade they never could do to any profit in the common way of labour, the ground being much more compact than in England, not so open or inclined to a loam: these loys have been in use with them near 2000 years. Their *slanes* or spades for cutting turf fire, or bog fuel, are of the same form, except that on the left or off corner of the edge issues out straight a piece of iron, like the cock of a garden dial, the base of which, being welded to the sides of the *slane*, and edged underneath, enables the labourer to shape his turf in an instant, and throw it up on the bank, where there is commonly a little boy or girl to receive it: this I have seen them do with great dexterity from the bottom of a bog-hole near fifteen feet deep; but they frequently sink much deeper. I cannot think but both these instruments would be very useful in many parts of England, especially where the spirit of improvement hath encouragers. IR.

aggregation, a quantity nearly equal to twelve Winchester bushels.

This kind of potato is introduced into Ireland but of late years : it is however well known there.

A potato intirely black is also in use in Fingal, near Dublin, fructifies abundantly, and eats exceeding dry, which principally marks the goodness of this root in almost every instance.

As to the description of the potato, its origin, and kinds most in use, it may not be amiss to treat a little before I proceed to the cultivation of it.

The potato is a bacciferous herb, with excellent roots, bearing winged leaves, a belled flower, and fundry dark-green apples * about the size of children's marbles. It is of the *sifer* or *sifarum* kind ; and most naturalists imagine it to be the *sifarum Peruvianum*, or skirrets of *Peru*, and thought to be long in use among the Spaniards, Italians, Indians, and several other nations.

It is probable the jesuistical dynasty, by virtue of their absolute power in the fine country of *Paraguay*, have greatly improved its cultivation in that remarkably benign and fertile climate.

It was first brought into Ireland, about the beginning of the seventeenth century, by the unfortunate Sir *Walter Raleigh*, (who introduced tobacco much about the same time) and planted in the county of *Cork*. The first trial the inhabitants made of them, was on the apples, which they boiled and eat ; but these not agreeing with the stomach, they made the happy experiment on the root, which ever since hath proved so beneficial to that kingdom.

There

* It is said the potato apple makes a good pickle, and some have tried them for seed ; but I fancy, if they answered in this manner, the Irish would not be ignorant of it at this day ; for such an easy resource would be very agreeable to their indigence. There have been several curious experiments made on the culture of this root ; but as I write to instruct, and not merely to amuse, I think it better not to swell this letter with them, referring your readers, who chuse such information, to the various books on agriculture. IR.

There are several kinds of them. Mr. *Maxwell*, of *Arkland* in *Scotland*, a very judicious gentleman, has particularly noticed six sorts, viz. The *long red*, the *round red*; the *long white*, the *round white*, or *Spanish* potato; the *blue*, the *leather-coat*, and an early kind that comes in a month sooner than the common sort, though planted at the same time.

This root being greatly manufactured in *Ireland*, they mix most of the better sorts promiscuously, both for use and seed.

I remember, about twenty-five years ago, the large red potato *, then called the *Castonian*, (perhaps from *Castile*,) as also the oblong *Spanish* white potato, to be chiefly in use; but now a lesser sort, such as the *Munster* or kidney potato, of a whitish or lightish yellow colour, the *leather-coat*, or round red *Cronian* potato, with a rough thick skin, and particularly that stiled the *Spanish* white potato, are mostly in use.

All these sorts are cut for seed, according to the number of eyes on them, and thrive generally well with very little care; so that all sorts being now so plenty, and answering so well, there are (as we may easily judge) no over nice distinctions made about them there †. The poorer Irish, who

* This potato is now much cultivated about *London*, the gentry in particular being very fond of it. Perhaps they think it makes a figure on their table, on account of its colour: as to its taste, it does not exceed the pale-yellow potato, which is by many thought to be a sweeter root. N.

† As to the manner of preserving potatoes in the winter against frost and hogs, their two greatest enemies, they are often considered of such little value in *Ireland*, especially in plentiful years, that the peasants bury them in holes dug in common fields, on which they lay a thick covering of earth well pressed down; and if the season proves frosty, they lay on straw, rotten hay, or litter. They are best preserved in very dry places, kept as much as possible from the air by a thick covering of dry earth, (but fine sand is better) and over all dry straw, haulm, litter, or hay. In brick vaults, almost without these precautions, they are preserved effectually, but more surely with them. Some put them into pits with layers of straw, &c. between. This though under the open air, may do; but it would be best done by the rich in an out-office, and by the poor in a corner of their

who affect not to plant this root in bottom lands, or wet swampy grounds, unless hard pressed for soil, or even in this case seldom attentive about the kind of potato they put down, the return being commonly wet, unfit for eating, and only proper for seed, which (from my little experience) I think makes but indifferent, though sown in the best prepared upland; for too much moisture, as well as too much dung, makes a potato wet: and plant it when you will, I am apprehensive it never loses this quality, which is the worst it can have, except being rotten, or frost-bit: nor will any eat so well, raised from dung, as without.

As the potato thrives in different soils, so there are different methods of cultivating it: I will therefore now proceed to that most generally in use in my neighbourhood, (and indeed all over the kingdom) called *grass potatoes* or *spuddane*, and by some (improperly) *con-acres* *, which

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seems

their cabin. These often put them on hurdles nearly over the fire, so that the continual smoke that surrounds them becomes a good preservative, and makes them eat dry and mealy, their two chief excellencies. The farmers pile them up in one of their offices, with an outside facing of bog turf well *saved*; but they are oftentimes negligent in not having them covered, on top, with fine dry sand, or earth, straw, &c. by which neglect the frost easily gets at them, and penetrates deep into the heap, besides spoiling all the outside ones: some lay on horse dung, but it may hurt their vegetative quality: some, who are overtaken by the frost, before they dig, (though sometimes this work is done in such weather, but improperly) cover their beds well with litter, &c. which I have observed to preserve a good part, but seldom the whole. They should by no means be ever washed, except previous to domestic use; nor ought the skin to be pared off, as is done with the turnep; (both which errors I find are much practised in and about London) for by washing away the finer particles of earth from their pores, they not only shrivel and decay sooner in a mild season, but admit the rotting influence of the frost in a severe one: also, when they are pared before boiling, the water affects the meal or core, in such a manner, that they seldom eat so dry and mealy as they otherwise would, which is the peculiar excellence of this root. IR.

* Con-acres rather consist of stubble-land, set in small divisions to the poor. This is commonly appropriated to oats, and is called oat-soil. It is almost as difficult to get in the rent of it, as that of *spuddane* land. Some stricter landlords detain the produce

seems to be the natural culture, but doubtless not so good to make the land stand long proof, (notwithstanding the graveling) as if artificial manures were added, such as dung, compost, lime, &c. for marle, lime-stone, gravel, sea-sand, shells, &c. I consider in the class of natural manures and the best; and providence hath kindly given them in every spot, (even in the unpromising deserts of Zara, &c.) had we known how to come at them.

Land in the ley, (as I said before) and that which requires no manure, the Irish seek most greedily after; some of which has not been plowed perhaps within this century: so that you can only just distinguish that it has been tilled, and the tilth generally curved, the old people inclining the plow with the casual shape of the field, so as to let the water in the furrow have a drip or fall.

When a peasant has the good luck to get a bit of such choice ground, (for two or three of them will be concerned in an acre, and few take more than one) he follows the old ridge with his *loy*, or Irish spade, unless compelled by the possessor of the land to make his ridges straight, which he most unwillingly does, and at best but awkwardly, with a rope made of hay or straw, or some of his wife's worst tow; neither of which stretching right, and often breaking, seldom admit well-looking ridges: these he makes from one end of his ground to the other, the beds being about three, or at most four feet wide, and the furrows, or trenches, about two *. When he deposits the seed on his bed,

produce on the premises till paid, and many of the poor leave it on their hands, which obliges them to take it home at great loss; yet they afterwards sue for the rent by process or civil bill at the assizes, (which is a great practice, and very beneficial for the Irish circuiting attorneys) and easily obtain the decree of the court; but notwithstanding, they do not always recover the damages. IR.

* The Irish, if they possibly can avoid it, do not plant their potatoes across the old ridges, which undoubtedly would be best for the landlord, the earth being thereby better mixed, and brought to an even surface *in futuro*. Having only a short temporary use in it, (being seldom allowed three crops, rather commonly but one) they think planting along the old ridge
the

bed, at about four or six inches at most asunder, he divides the turf of his furrow in two equal parts, which he turns alternately in fods on the edge or verge of each bed, the green side on the potatoes, cutting the fods on three sides or angles, leaving that next the bed uncut. This laborious work the poor fellow does surprisingly quick: two more men follow him, one digging the under stratum, and throwing up on the middle of the bed as much of the earth as he conveniently can with his *loy*: the remainder the third man casts on with his shovel, settling the bed in the form, or manner, in which it is to remain *.

Some cover their potatoes at first (through want of time) with only the fod, and about four or five inches of earth, and finish them perhaps, that is, cast the last covering on them, not for a month, or six weeks after; which possibly may greatly check their growth. Many account this the best way, and it is become common; but I attribute the neglect of not finishing their potatoes, (as the term is) in due time, to no want of proper knowledge in the common

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Irish,

the most profitable husbandry, which is an erroneous notion, for many physical reasons needless to enumerate; so that the plantations generally look very ill to the eye: add to this, that they are unsolicitous about the breadth of the ridges always adhering to that of the old; and even, if there happen to be no signs remaining of the old tillage, they are still prone to these defects in method, just before observed. IR.

* The Irish, when they conveniently can, cover in their potatoes all at once; but when leisure, or rather liberty, does not permit, (which is too often the case) they cover them at first about four or five inches deep, and where they begin to appear, give them a second covering, nearly like the first, which most commonly finishes the planting: some few indeed do them over very lightly a third time; but this must be done with circumspection. The common Irish are better naturalists than one would imagine: though they cannot be easily got out of their old awkward unprofitable customs, they nevertheless are very intelligent in what belongs to their potatoes, corn and cattle: they know by frequent coverings, that the weeds are prevented from robbing the potatoes of the substance of the dung and earth, as is also the potato stalk, by being thus choaked till the root becomes of a size to draw sufficient nourishment in spite of it. They are scarcely hurt by any weeds, except the *thistle* or dock, and these they are careful to cut away. IR.

Irish, but their inability to give the proper attention to their own little affairs, occasioned by the greedy severity of their masters, as before observed.

Others there are (and many) who, making the furrows unproportionably narrow to the beds, throw up a third spit or stratum, and perhaps not until two months after the first setting.

This pernicious method may possibly destroy, or check the weeds; but certain I am, it will not contribute to the encrease or largeness of the root, in the unphysical or over-heavy manner in which I have seen it done; because this lower stratum, which is mostly sand, remains on the top of the richest part of the soil, and being thus unmixed with it, prevents it from receiving the proper benefits of the air, &c. besides, too great a covering on the potato is highly prejudicial to it.

In other cases, these stratums thrown up, and mixed into a good tilth, would answer wonderfully, mixing well, being the life of good tillage. I would therefore in this place recommend to our farmers (who are too penurious of their land) to make their potato trenches so wide, as not to require throwing up much of the third or sandy stratum on the last covering, or landing, of their potatoes*; and they will find a much greater return, and one half (or more) less of *pooreens*, or small potatoes; which is an object highly worthy of their notice. The experiments I have made, I purpose repeating on my return to Ireland, and hope to prove this simple method to exceed that in the hillock, or in the drill way.

In this manner all ley land is sown with potatoes by the common people, and most others, whether manured or not. If dunged, the dung is laid out as the ridges are to be, but the sand is spread all over the surface. Commonly little boys and girls precede the setters on the ridges, laying down the seedlings or potato eyes, which they do very quick,

* The reason why the poor Irish are so sparing of their land as not to allow width enough to the intervals, is very evident; they pay sometimes four times as much rent as the land is worth, giving not uncommonly five pounds an acre for it. N. A.

quick, and tolerably well, at the appointed distance. This seems a giddy part of the business, and well suited to their years; but custom makes them perfect in it *.

The next general method is planting potatoes in stubble-ground, which is, in the common way above mentioned, by dunging it well, and sometimes by plowing it in, and then shovelling up the ridges, a man going before, lightly digging them, that there may be a sufficient quantity of mold to cover them; but this the poorer sort cannot well compass to do, and always avoid it when they can get a fresh or ley surface.

Nor do they sow them to chuse, the second year, in the same ground, without dung or some other artificial manure, (for the natural, such as sand, marle, &c. would not do) unless it be exceeding good.

Lime indeed in this case would very probably answer, but it is rarely tried.

There is also a custom a good deal in use, which is by sticking or thrusting potatoes in stubble land fresh plowed, which is done in this manner: a man (but seldom two) goes on the crown of a narrow-plowed set, and sticks his *loy*, or *Irish spade*, in it, every here and there, with his right foot, holding it in his left hand, and with it pushing the spade once, and sometimes twice from him, to make an opening, (which I have seen done with a good deal of dexterity) and with the right hand, that contains the seed, (a convenient quantity of which he carries in an apron, or cloth, tied round his

* The poor always give help *gratis*, in that country, to their landlord, at potato setting and digging time, so that it is not unusual to see forty or fifty, and perhaps more men at once in a gentleman's close, planting or digging his potatoes, the gentry having generally plantations consisting of from one to half a dozen acres, for the use of their houses, and for seed. In digging time the poor make very free (like the smugglers) with their neighbours horses, carrying home, sometimes to a considerable distance, their potatoes on them bare backed in over-heavy quantities, seldom sparing the poor animals on this occasion, by which means they do much damage. This work is always done in the night, and what with the great depth (as about me) of some of the bye roads, and the over-loading, the horses seldom escape being hurt in some shape or other. IR.

his middle, so as to let the contents be easily come at) he throws one, and oftentimes two sets, or eyes, into the opening which the loy makes behind; and on his drawing it away, the loosened earth falls in and covers them *. Soon after

* It may seem surprising that the Irish, who drive on the potato culture so extensively, are oftentimes very remiss in the preparation of the seed. They use promiscuously all sorts for this purpose, except the poreens or smaller ones, and even some of them in case of want, which otherwise seem designed for the swine. They indeed prepare the seed properly enough, cutting them out into as many little pieces as there appear eyes: in the larger ones there is an inner piece remaining, that can have none; this is cast away: the lesser sort are cut in two or three pieces, according to the number of eyes; and few are planted whole, unless through inadvertency or necessity. Thus far they are right; but my objection is this: it is a common and an erroneous practice to keep the seed a month or more cut, and piled up in an open room previous to setting-time. The dry, and oftentimes frosty winds of March and April, operating on the sides of the cuttings, so shrivel them up, and stop the pores, that when they come to be put into the ground, the proper and instant vegetative participation cannot take place till the moisture of the earth re-opens the pores, so as to admit such vegetative communication: this may take up some time, according to the mildness or severity of the season; and numbers of the cuttings may be so withered, as to be past benefiting of it: hence it follows that the progress of the vegetation may be retarded or driven into the winter months, and of course soon stopped (the earth being then as it were locked up); consequently this root will lose greatly of the size it otherwise would acquire. I know some of the Irish affect to say the large potato is not the best in taste, or for use; that the middle-sized are preferable; but I believe all the most judicious part of the world will allow, that where the large sort can be obtained equally as dry as the other, a plentiful return of them, which may be had only from the same culture that the smaller require, will be infinitely preferable. I believe all England can testify that the larger sort, when not planted in wet grounds, are as dry and as well tasted as any others: I have most commonly met with them so here, and likewise in Ireland, where the soil is not less fitting for them. In most parts of France, indeed, they are in the general rather smaller than the third size, and eat all the year round as our's do when they are first brought to market. — The foregoing hints, which I make bold from my own slender experience to give, relative to the care necessary in the preparation of

after he dungs the ridges, and covers them up, as in the preceding method, with mould out of the furrows.

Sometimes also they do this work with a stick about eighteen inches long, and an inch or so in diameter, pointed at one end, and somewhat curved at the other. By this easy means husband, wife, children, and servants, (if they have any) and a friendly neighbour or two, (who may be helped in return) assist at it for greater expedition, especially when the season happens to be advanced.

In Scotland they do this work somewhat differently.

In Ireland also there are many, who sow potatoes after the plow, the plowman letting the sets drop in as he goes along; and the harrow matched to the same plow, following him close behind, covers them in. There is no great difficulty in this, the land being in tilth. Over all they put dung; but they should mind to give it a light covering, that the substance of it might impregnate with the adjacent earth, which it would not do, but evaporate by being left exposed to the air, &c. yet this precaution many are very negligent in.

The other methods, as in the drill, or hillock, or horse-hoeing way, &c. are little used there, except among the more curious; but they being well known in England, it is needless to mention them in this place.

The next thing requisite is the fencing, which should be done, at farthest, before the stalk begins to appear; for, if the cattle, that are in that season greedy for fresh vegetables,
get

of potato seed, will I hope be attended to, and found useful. Let me also observe, if it happens your seed is longer cut than you intend it should be, take a sufficient quantity of the juice of any sort of common or different dungs or compost about your house (which you may easily collect on a wet day); steep it in it for about forty-eight hours, or longer if you will, only taking care to let your cuttings thus remain in this lye till you are just going to plant them. If you can collect sufficient quantities of the oozings of their dung-beds, near the beds themselves, it will do equally as well as taking the trouble of carrying it to one of your out-houses, and putting it into vessels. But *cave fures.* IR.

get at them, the roots of such as they nip will never come to the size they otherwise would.

This is well known in Ireland; and yet the poor, chiefly I believe from inability, and partly from a sort of carelessness, or rather laziness, they still inherit (notwithstanding the mixture of English and Norman blood, &c.) from their Spanish ancestors, are very remiss in this respect: especially in the chiltern, or more fertile parts of the country; where, in most matters of husbandry, they leave too much to chance, relying on the bounty of the soil.

About me, and in many other parts, they very commonly do not put on the first covering till about the middle of May; and the second, perhaps, not for a month after; so that it is often July before they fence them properly: and where many of them are concerned in a plantation (as is usually the way) it is most troublesome and difficult to get each man to do his part of the ditching, which commonly is but a sorry mound of fods, with some bushes foddled down on top, to keep out sheep, that smell this plant when it rises, (as cattle do corn) and are very dexterous in getting at it.

Some of these poor people are so heedless, they never can be brought to make their fences; and then the owner of the ground, in his own defence, is obliged to get it done at an advanced price, and they to pay for it, or their potatoes to remain.

Many of them, especially in cheap years, leave them on the landlord's hands; and, unless a farmer collects himself, or has a good servant to do it, the rent is not had without immense trouble; and some of it never. Notwithstanding these difficulties, many farmers have made easy fortunes in this way.

Thus it happens, at the time they are often finishing the fencing, they ought to be weeding their potatoes. The weed that mostly annoys them is the Scotch thistle: this should be cut away in June, and if the soil should be so rich as to require a second weeding, (which is very often the case)

it

it should be done in August. There will be no other trouble with them till digging-time.

The best time for this work is in the latter end of October or beginning of November, to avoid the early frosts, which are mortal to them: but if, by bad husbandry, they have been planted late, they should be left longer in the ground and covered with litter, or haulm, to prevent being lost in this way.

About Michaelmas the cattle are let through them, the roots not being then affected by the nipping, or beating down, of the stalk: this the peasants know by the colour of it, which becomes a dark-brown, losing its verdure; as also by the apple and root.

The more needy begin to dig them for use in August, though they are not then near so long in ground as they are in England; which demonstrates the excellence and strength of the Irish soil.

When gentlemen-farmers dig their potatoes, they set on a great number of hands at once, two to a ridge: boys and girls gather them promiscuously, big and little, into bags containing about two Winchester bushels; and thus they are carried to the farm-house, and thrown into a room, in one heap, part of which is destroyed by the frost, a great part by the kitchen, also by the hogs, who destroy them much while in ground, there being hardly any fencing against them; a great part are also stole by the followers, or hangers-on; and the remainder rarely suffices for feed, of so little value is this estimable root considered in those parts: and yet I have often known them at a very high price, from ten to twenty shillings, and upwards, the *big barrel*, which is the usual measure in the western parts of Ireland; that is, above two barrels, or eight bushels *Winchester* measure.

Had they such places as *Covent-Garden* near them, the case would be far different: but where there are no convenient and brisk markets, the waste in farms is always great.

Though, as I remarked before, low or swampy grounds don't answer well for potatoes, yet they sometimes thrive, and are large, the meat being generally scabby, close, wet and heavy, from the too great impregnation of the water, which renders them unpalatable; and not the best for seed; however, such are chiefly used in this way *: yet I have seen them planted in red bogs, which are the wettest and worst; and the bog being previously sanded and dunged, the stalk looked green and healthy, and some of the roots might perchance have eat dry; but those planted in black, or dryer bogs, have been found to succeed well.

It is so with the hop-plant: I am confident it would thrive extremely well in most bogs; and I believe the experiment has been tried to advantage in Scotland, and also in Ireland.

There is no culture perhaps, yet known, will better reclaim waste and unprofitable lands, than that of the potato. Ireland can well prove the truth of this assertion in a numberless variety of instances.

I have seen several tracts of woodland stubbed up, and brought into fine tilth, by means of the potato husbandry. America, I believe, can say the same †.

Of

* The Irish are, in general, little solicitous about the change of their seed potatoes. How many shoots, or stalks, an eye, or set, puts out, cannot, I believe, be well determined; no more than whether all the sets take place: but to one stalk generally hang, by small, long fibres, clusters of potatoes (soil and season being favourable) big and little. The growths always proceed from the part of the cutting in which is the eye, so that it is useless to plant any pieces that have them not; and the Irish sometimes (too much taken up with babling to each other) cut them, as it were, mechanically; that is, without looking at the potato, or observing where the eye is; by which means they cut the eye across, more or less, and thereby spoil the vegetation of much seed, to the great detriment of their employers. Such cuttings may emit stalks, but seldom potatoes; or if they perchance do, they are seldom other than *porrens*; that is, the smaller sort of all. Ir.

† The plain reason, why potatoes are an excellent crop for reclaiming land, is, on account of their requiring so much tillage; by which the soil is sure to be thoroughly reduced, and brought into good tilth. N.

Of late years the hard-hearted sky-farmers, that is, the inferior sort, and even some of our gentlemen-farmers (I blush to have it to say, on account of the honour of poor Ireland; but the truth is always best told, as it may be of use) drive the poor into the mountains, moory grounds, wooded and stony lands, and even into the bogs; and when, by the culture of the potato principally, they have reclaimed them, so as to be fit to admit cattle, they are turned out without ceremony *. I have in such places seen as fine crops of potatoes, and afterwards flax, and different kinds of corn, as ever I met with any where.

The mountain, and other surfaces, except bog, seldom fail being blessed by nature with lime-stone, gravel, (which is the commonest) or some other manure, adapted to them; so that it is nothing but hands, money, and a proper limitation of the grazing-farming, that are wanting to make almost the whole kingdom look like a garden, or like England; I need go no higher with the comparison.

It is true, in some few counties of Ireland, in particular districts, Nature either has not been so bountiful, or the farmers have not found out the internal manures; being obliged to carry sea-sand, and other sorts, many miles; in which however they find their account, notwithstanding the, impolitically, too-much-limited trade of the kingdom.

Before I dismiss this subject it may be proper to observe, that a second crop of potatoes is sometimes taken out of the same land successively; but this is not common, at least about me, though the land I believe is as good as any in the province. On the contrary, the usual way is, after the

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first

* I have known considerable villages of them, in a thriving condition, set adrift all at once, to make room for sheep and other cattle. This is downright barbarity; and much of it arises from a destructive custom prevailing in that country, where one man takes, without ceremony, the farm of another underhand: these are not to blame, but the greedy head-landlord, who, like a Jew, lets to him who will give the most. Such, often not distinguishing the solidity of tenants, and eager for high rents, are very justly choused out of the whole, and glad to let again to the old tenant on more moderate terms. IR.

first crop of potatoes is taken off, if the soil is strong, they immediately sow bere in it (of which perhaps I may have occasion hereafter to write to you *) or keep it till the following spring for flax, which requires an equally strong soil: or, if the ground be but of a middling good sort, they sow it, just after the potatoes are taken out, with wheat; or keep it till the April following for barley.

The sky-farmer generally takes the land into his own hands after the first crop of potatoes, and sows it with bere, wheat, or barley, for two or three seasons; after which, if he refreshes it with a summer, or a winter fallow, he sows the said kinds of grain in it for two or three seasons more; then he takes two or three crops of oats: and when it is well impoverished, or drawn, (as they call it there) he lets it for several years together, in con-acres, to the poor people, for at least one-third more than the real value.

From hence we may judge how much an alteration of method in husbandry is wanting in those parts.

Whenever the influence of Britain can reach there *properly*, it is to be hoped all bad methods and customs will be removed.—Or, there rather appears greater hopes from the most patriotic, and never-to-be-too-much-commended endeavours of the *Dublin Society* †; who, to their immortal honour, have in a manner, with respect to agriculture, first awakened all Europe into a liking for this much-neglected science.

There is every sublunary good to be expected, by poor *Ireland*, from the disinterested and indefatigable labours of that generous society: for after all, as to England, I fancy she has as much as she can well do, to take the *proper* care of herself; and, if I am not mistaken, before the year
seventy

* Whenever Mr. Irwin will please to favour us with an account of the culture of *bere* in Ireland, it will be esteemed a great favour. N.

† The Dublin society is indeed the mother of all the other societies of agriculture in Europe, being first established, and setting before the world the patriotic example. These societies are now greatly multiplied, particularly in France, where there are several established in almost every province. N.

seventy is expired, she may find it necessary to call once more on that her younger sister for assistance; who (and perhaps not very long ago) hath been of no inconsiderable help to her in the grievous day of blood and danger.

Indeed if that people be blessed with v——ys such as they approve, with men of honour, who scorn to preside there in the leading-strings of a m——r, (mind, Gentlemen, I name no body, and to flatter any I mean not) then, indeed, a poor Irishman may rejoice in the reasonable expectation of being soon enabled to eat his potato with a little better seasoning than salt, and to dance at the door of his landlord with a greater spirit of independence than he can now. But I would never have this independence arrive at *licentiousness*, or the shaking off the necessary degrees of order and subjection.

Thus, Gentlemen, I have ventured, from experimental knowledge, to trouble you with the foregoing account of the potato, which is the material part of what I just now recollect; desiring, if it should seem to you in any sort serviceable to the public, to give it a place in your *Museum Rusticum*, which I think by much the most useful of any monthly collection published in England. On my return to *Ireland*, any farther insights I may find myself enabled to give you, in this, or any other matter relative to agriculture, I cheerfully will, as I think all lovers of their country, and indeed of human-kind in general, ought to encourage your laudable undertaking. This, however, I desire not to do with the least view of acquiring foolish transitory fame. I leave that to my superiors.

You'll pardon the length of this letter, because the subject is most interesting, badly as I may have handled it.

All the plea I urge in arrest of critical judgment is, that I wrote it from a recollection *only* of my own little experience and observation; which I flatter myself will be found pretty near the letter of truth. I am,

GENTLEMEN,

Your most obedient servant,

London,
Jan. 10, 1764.

JOHN IRWIN.
N U M-

NUMBER LXXXIV.

*A Letter to the Editors, on the Benefit of Salt for destroying
Worms in Horses, Dogs, &c.*

GENTLEMEN,

APPROVING of your scheme, as far as I can judge of it from your own account of it in your address to the Public, and the two first Numbers; and encouraged by the sense your correspondent, who styles himself *Agriculturae Amator*, No. XIX. p. 97. has of it; I take the liberty to communicate to you an observation or two on that letter, the writer of which will not (I hope) take any thing amiss I shall say with respect to the *rationale* of it, since I shall myself offer a conjecture on the subject of his letter; and therefore, dealing with him as I would myself be dealt with by others, may' presume he will not; but am previously to declare it as my firm opinion, that your scheme, as well as any other, which is calculated for practical uses, will be best answered by a proper communication of facts first; and then, if you please, may be added any philosophical reasonings on, to account for, them, having more than once or twice (who, though an old man, never troubled the world much with writing, nor shall long trouble it with myself) observed, that very probable and very ingenious hypotheses have proved very useless and insignificant in practice.

I remember once a project was communicated to me, which, if it had answered in practice as well as it looked in theory, would have been beneficial to some people in most places; when, being young and sanguine in my expectations, I determined to try it; but the nearer I was to its completion, the more doubt I had of its success, like some lawyers when the trial is fixed to come on, or alchymists just before the time of projection, who never till then shewed the least diffidence; and it happened to me, as it often does to

the former, and always to the latter, that I had spun my thread too fine to be of any service.

But to the point——

Your correspondent recommends salt to make horses and black cattle thrive, from an observation that they manifestly thrive in salt marshes ; and I agree with him, that it is found so, and with very few exceptions.

He then, signifying he had not met with any good reason assigned for it, offers the sea-air, as wetting their appetites, for one ; but, though I know it has often that effect on men, and allow it may have on beasts, yet it is not owing solely to that, since salt-marshes at a great distance from the sea, such as is that of one near Nantwich in Cheshire, has the same effect ; and I have known horses sent there surfeited, and as lean as possible, in a month's time look as well, and be grown as plump, as ever they were before.

The next way given to account for their thriving is very modestly in a query, Whether it may not be owing to the particles with which the earth, and its produce, near the sea, is impregnated ? And here I likewise join with him, if the fact be, as he says, and of which I have no doubt, that beasts grow fatter in such lands than others ; though I do not absolutely agree with the note annexed, that, though cattle, who drink plentifully, do thrive apace, they do therefore thrive, because they are by such vegetables made drowsy ; but that such vegetables do both create an appetite, or rather, with my reasons below for it, first take off their disinclination to eat, and also give them a strong one to drink more than usual.

As to the third way, which is proposed in the same decent manner as the second, I am inclined to think with the annotator, for the reason given in the note under p. 98, dews not being found so impregnated in the hottest climates, though saline particles are often raised in what is called the spray of the sea, and carried to a considerable distance.

And now to offer my own surmise, allowing of that of your correspondent, *viz.* its carrying off foul humours, and of his reason why it does not continue purging, to which last
may

may be added that it has not the same effect to so great a degree but by its meeting with such humours to work with, as well as on, I am inclined to think that many of the disorders of cattle, and their consequential poverty of flesh, are owing to worms, against which I have often given salt to my horses and dogs with good effect, and have seen worms and their skins and filth voided by the former many a time after their being well dosed with salt.

I am credibly informed it has long been a custom in one part (*Provence*) of *France*, to give salt, by thrusting a handful down their throats once a week, to horses and cattle at grass, with a view of fattening them, and preserving them from disorders; and that sheep, and goats too, a little used to it, will lick it off the ground.

On the whole, I am satisfied that salt will disturb and destroy worms, which probably hinder cattle often from thriving, and take off their stomachs to food; but whether they are the cause of those disorders in cattle for which salt-marshes are found a cure, and so then they thrive, when the worms are removed away; or whether, as has been asserted, most disorders of the stomach and bowels are owing to worms, I will not presume to say: but surely if a lean beast, who otherwise seems healthy, or a disordered one, has worms, the destroying them will be adviseable, when it may be done so easily, and their thriving afterwards may the more reasonably be expected.

As I offer what I have said as one way of accounting for the good effect of salt-marshes on conjecture only, supported by the proof I have of salt being destructive of worms; so shall I be glad to have it confuted, and ready to imbrace a better, but more than either (as one plain matter of fact is preferable to a thousand of the most refined reasonings, for general use, and such only can be of any to the generality of mankind) to have it confirmed, that salt will cure the ill effects of clover, &c. when cattle are first turned into it, as many farmers have suffered by it in my neighbourhood, who am, wishing success to your undertaking,

Dec. 20,

1763.

Your humble servant,

A. J.

NUMBER LXXXV.

A Letter to the Editors, particularizing several Tokens of Coals being on an Estate.

GENTLEMEN,

ON perusing the letter, No. XXXV. in the *Museum Rusticum*, &c. respecting the most probable method to know if coals be on an estate, it particularly seemed to draw my attention, because enquiries of this nature will, I am very apprehensive, become every year more necessary, as many parts of this island are almost destitute of that, without which we cannot subsist; I mean fuel for fire. And many other parts, from which those were once supplied with wood for fuel, have now very little to spare; for which cause, not only our large cities and principal towns, but also great part of the inhabitants in country places, must be supplied with something as a substitute; as turf, peat, or coals.

From the first no great supply can be expected, except to those who reside near such barren sandy heaths where *petty-whin*, *heather*, and *short furze*, plentifully grow: from the second, it is true, something may be expected, as large quantities thereof may be had in many counties; but as an unpleasant smell accompanies the burning it, it is not likely there will be any more of it used for culinary uses than what bare necessity obliges: so that it may justly be concluded, coals will ever remain that kind of fuel for which there will be the greatest demand; the consequence of which may be reasonably supposed an increase of its price, unless greater supplies can be discovered than what at present are known.

These considerations have frequently induced me to wish, for the sake of the middle and lowest rank of people, that more frequent trials might be made after this valuable mineral; and as I live in the neighbourhood of many collieries, I have, as opportunity and leisure would permit, made fre-

quent inquiries and observations on the most probable signs on the surface where this is to be expected underneath; some of which I now propose to communicate, as, perhaps, from these hints an inquiry of this nature may be carried further by persons better qualified for such undertakings.

One general, and, I think it may be said, certain sign is, iron ore; for wherever this is to be met with, coal is near.

But, the better to guide, it may not be amiss to fix some certain, and easy-to-be-known sign, on or near the surface, as a standard by which to direct the search; inasmuch as the earth is composed of several *strata*, consisting of different kinds of earth and stones, all which have a *fall* or *dip* to some point between *the north and south eastward*, their several sections appearing on the surface in the opposite points, and is by miners, at least those who dig coal, called *the crop of the veins*.

This being premised, I would propose the stratum of *freestone*, or what may be better known by the name *Bath-stone*, for the standard, as being the easiest to be discovered on the surface; laying it down as a certain maxim (at least it has appeared no other to me) that not any coals are to be met with to the *south* or *south-east* of the section of this *stratum**; but must be looked for, if any success be expected, on the opposite side, between the *north* and *south-westward*.

The section of the *stratum*, which appears next on this side, is a kind of *sandy rock*, in which large stones of harder consistence lie interspersed; next unto this frequently appears a section of the *white lias-stone*, but not in every place, it being in some places lost in another stratum, consisting of very hard *lime-stone*, and a kind of *grey iron flinty stone* intermixed, which lieth on a stratum of *marl* of various colours, but mostly *red, brown, and blue*, in veins.

* According to the best observation I have been capable of making, this stratum has its course through England nearly in a line N. E. by N. and S. W. by S. This I apprehend to be its bearing, though allowance must be made for projecting of promontories, and the inequality of the surface, by which means it is in some places thrown in opposite directions, but in a few miles resumes its natural course. *This note came with the letter.*

The next section is *clay*, the colour frequently varying, but is mostly of that of *yellow ochre*, inclining to an orange; under which is the stratum of *penant-rock*, in which are frequently met with *veins of iron*, answering the character of that metal in every respect, except ductibility; and very frequently do appear, in the quarries of the stone of this stratum, lumps of *pure coal* in solid pieces of this stone; and sometimes *thin veins of coal* between the strata of stone in this stratum.

Next unto this, and often intermixed with it, is the section of the stratum which contains the coal, and is what the miners call the *crop of the vein*, and is discovered by the ground being *springy*, and subject to *green moss*; amongst which water frequently stands in little puddles, the bottom and sides of which are generally covered with *yellowish slime*, resembling *sulphur* in appearance; and if the surface of the ground be so situated, as that the water may drain off, the course, or channel, in which it runs, is usually of the like colour, and even the stones are tinged therewith.

But though I have called this a stratum, or one layer, yet it is made up of several strata, consisting of *coal*, of *dun*, which is an imperfect coal, *earth*, and *stony substance*; each being of various thickness, so that the sections of the strata of coals are often a considerable distance from each other: but the *pits*, or *shafts*, by which the coal is brought to land, are mostly made in or near the section of the stratum of *clay*; sometimes in that of *marl*, and sometimes in the *penant*, but in neither of these two very often; and in sinking down through these, that is, the *clay* and *penant*, there is frequently found in the clay very hard *lyas*, or *saints-head stones*; and in the stratum of *penant* its hardness, which appears at its section, is generally become soft, and, when exposed to the air and wet, subject to fall to pieces.

To enlarge further would exceed perhaps due bounds, and take up the place of some more useful observations, in the monthly publication for which this is designed, should it be admitted to a place therein; therefore shall conclude with saying I greatly approve the plan, and wish the desired

success may attend; proposing to communicate (according as leisure will permit) such sentiments, founded on observation, or plain matters of fact, as I apprehend may be of public utility*.

RURICOLA GLOCESTRIS.

Dec. 24, 1763.

L.

* We are greatly obliged to this gentleman for his favour: by continuing his correspondence he will add to the obligation.
N. R. T. O.

NUMBER LXXXVI.

A Letter to the Editors, rectifying a Mistake in the Piece marked No. LIV. respecting the Coleseed Plant.

GENTLEMEN,

IN the letter I sent you, dated Nov. 3. (No. LIV.) on the culture of coleseed, your printer has mistaken a word, owing perhaps to the badness of my writing.

Pray let this be rectified. In p. 238, lines 13 and 37, for *colewort* read *coleseed plant*, and the same in p. 239, lines 6 and 16. This may perhaps not be thought of much consequence by some of your readers; yet the proper distinction should be preserved.

The coleseed plant is the *napus sylvestris*, C. B. and differs from the colewort, though both of them are of the cabbage kind.

The coleseed plant has by some been thought to be of the same species with the *napus sativa*, *radice alba*, C. B. or the French turnep; but this is a mistake, they being essentially different.

The seed of this plant is sometimes apt to fail; therefore, as it is cheap, I would recommend it to the farmer to sow it thick enough, as the superfluous plants may easily be cut up by the hoe: I only mention this, as I think I omitted it in my last.

I am, GENTLEMEN,

Witham, Essex,

Your humble servant,

Jan. 4, 1764.

S. T.

NUMBER LXXXVII.

*A Letter from C. W. Esq; * Member of the Society of Arts, &c. to the Editors, proposing the Establishing Societies of Agriculture in the several Counties of England.*

GENTLEMEN,

AS every method tending to promote agriculture must fall under your plan, I take the liberty of troubling you on a scheme I have long had in my thoughts, and which I see briefly touched upon in your collection, in a piece marked No. LXIII. of establishing *societies for the improvement of agriculture* in every county of England; for which purpose your publications will be of infinite utility: but the good arising from them, will be the giving premiums for each particular species, as may be most suitable to the soil and situation of that county.

I remember such a one to have been set on foot by some very public-spirited gentlemen in Wales, and I dare say great improvement accrued from it.

When such things are considered in their extended view, they will be found to be universally beneficial, either by making rivers, roads, producing particular species of grain most called for in that place, and for planting timber, where it might turn out to the best advantage.

These are circumstances rather beyond the scope of the *Society of Arts, &c.* in London, and are such peculiar articles as can never be so well known or encouraged as by the inhabitants: not that it is supposed to raise a fund equal to the above purposes, but to afford proportionable allowances to persons to set about works which must eventually turn out to their own advantage, who would not have thought of trying experiments

* To this gentleman the editors are indebted for the piece marked No. I. they have a high sense of the obligation, and would esteem any future communications as a singular favour conferred, as well on the public as themselves. The Kentish method of cultivating hops, would be particularly acceptable from so able a hand.

experiments without some pecuniary encouragement to repay in part their first works; and by each county-society communicating their remarks through the channel of your *Museum Rusticum*, other counties would at the same time receive information of what is doing in each.

It is manifest that promoting the natural advantage which every county has, must tend to the good of the whole kingdom; and it will have a particular conveniency of opening material correspondences between the different parts of this nation, and setting forth to public view the local advantages of each place, since the encouragement for the growth of oak timber should be in maritime counties, or near navigable rivers, as the carriage from other parts would eat up the value.

In this manner every thing would find its true and proper situation.

I observe lately in the news-papers an article from Paris, which mentions that several such societies are established in the different provinces of France; and surely it may be easily done in each county of England.

A moderate subscription of one or two guineas would annually raise a competent sum to do a great deal of good, and the subscribers would receive a ten-fold profit in the improvement of their estates; added thereto the pleasure of contributing to the beauty of the place where each gentleman resides.

As to a method of proceeding, there cannot be a better than the plan of the London Society and their books of premiums, fully sensible that the members would be very ready to communicate any information or knowledge to form societies so contributory to their own institution.

The first thing to be considered by the gentlemen at their meeting, is what may be best adapted to the particular situation of their county, and afterwards such articles as are not sufficiently cultivated; for which purpose premiums will be offered by them, and in due time the certificates of the several claimants examined into and adjusted: after which the gentlemen will undoubtedly send an account of their

their proceedings to be published in your *Museum Rusticum*, and another copy to the Society in London to be by them registered.

I dare say I have sufficiently explained my idea, and hope some active gentleman, of which I am convinced there are many in every county, will establish such a society, and by custom and practice others would naturally follow; and the instructive conversation which such meetings would produce, will be an additional plea in favour of them.

I am,

Jan. 16, 1764.

Your constant reader,

C. W.

NUMBER LXXXVIII.

Letters concerning the former Transactions of the Society for the Encouragement of Arts, Manufactures, and Commerce; particularly in Relation to the Premiums for A Method of preventing the Destruction of Turneps by the Fly; — A Composition for Marking Sheep without Injury to the Wool; — and A Preparation for taking Rats alive. Containing several useful Observations and Hints respecting those important Subjects.

To the Editors of the MUSEUM RUSTICUM.

GENTLEMEN,

THE three following letters are at your service, if you chuse to give them a place in your *Museum Rusticum*. The one of them is an inquiry, made by myself, about the former transactions of the *Society for the Encouragement of Arts, Manufactures, and Commerce*, with respect to three interesting subjects: the other is the answer of the gentleman to whom I applied on this account, and whom I conceived to be able to give me those lights I wanted, by his having been particularly attentive to matters of this kind, and a constant frequenter of the Society's meetings and committees.

I give you the whole as they are, rather than to try to abridge them, and extract the principal matter, as the epistolary form is, perhaps, more agreeable, as well as intelligible, to the generality of your readers, than a more brief and formal manner of treating subjects of this kind.

I am, your unknown humble servant,

Y. W.

To Mr. ———, in London.

S I R,

AS you have been so good as to promise to give me, from time to time, an account of any of the matters that fall under the consideration of the *Society for the Encouragement of Arts, Manufactures, and Commerce*, I may be desirous to inquire after, I will take the liberty, at present, of begging to know what was the result of three premiums offered some years ago: the first, for *A method of destroying the fly in turneps*; the second, for *A composition for marking sheep without injuring the wool, as is now done by the use of pitch*; the third, for *A preparation for taking rats alive*. These were articles very well worth the notice of the Society; and I am a little perplexed to account why, at the same time the advertisements of the several premiums for them were dropt, nothing was communicated to the public as being deemed effectual; since, I should imagine, such momentous premiums would not be discontinued without the end had been, in some degree, obtained. If, therefore, the least useful information was brought to light, by your proceedings, with regard to any of these articles, I should be greatly obliged to you for imparting it to me; especially as to the preventing the destruction of young turneps by the fly, since any remedy, even a palliative one, for that evil, would be of the greatest service in my neighbourhood. I shall consequently esteem any satisfaction you can give me on this subject, as a favour, and remain,

S I R,

Oct. 6, 1763.

Your obliged humble servant,

Y. W.

To

To Y. W.

SIR,

I shall be ever ready to give you all the information I am able, in relation to such articles as come before our Society, or any other where I can in the least gratify your curiosity, or be of service to those for whose sakes you make such inquiries.

As to an effectual method of *preventing the destruction of turneps by the fly*, it is very true, the Society did some years ago offer a premium; and though I was not a member when the advertisements on that head were first settled and published, yet I attended the committees which took under consideration, the last year of publishing such advertisements, the several methods offered in claim of the premium (for several there were); and which came to a resolution, that none of these, so offered, appeared likely to be effectual. This failure in the success of the advertisements, which, as far as I remember, had been repeated several years; and a notion, which was then very justly started, of the difficulty of deciding on the merits of any proposed methods, that appeared to promise any efficacy, if such should be offered, without going through a set of experiments which could not be made by the Society, nor even under their inspection; determined the committee to recommend also the discontinuance of the advertisements for this premium, and occasioned those circumstances, which, according to your letter, seem to you a paradox: and I am, indeed, of opinion myself, that, notwithstanding the importance of the object, they were very right in their conduct as to this point; and that there was a far greater chance of their drawing themselves into perplexities and embarrassments, than doing any good as to the thing proposed.

But though I cannot offer you any thing much worthy your notice, taken from the communications made to the Society, in claim of their premium for a *method of preventing the destruction of turneps by the fly*; yet I have a memorandum of one imparted to me, at that time, by a person of fortune, and good sense, who attended the com-

mittees that sat on this subject ; which was vouched to me, by him, to have been found, on repeated trials, to answer extremely well for this purpose. I shall therefore most willingly communicate the same to you, as a matter, I think, greatly deserving a further examination and trial ; as well on account of the authority of the person who obliged me with it, as from the great plausibility of the principle on which it is founded ; there being, I think, no other principle that seems to promise any practicable means of fully effecting this very desirable matter.

The explanation of the method may, I think, with some little study, be easily obtained by a person of your sagacity and knowledge ; but to save you that trouble, I will give you my own sentiments on it : only, before I enter on this, it will be proper to present you with the method itself, as it was imparted to me.

“ A quantity of turnep-feed, of the last year, must
“ be taken, together with an equal proportion of some of
“ the produce of the year preceding that : each of these
“ quantities must be divided into two equal parts, or halves,
“ which may be then mixed together. One of these two
“ parcels, or mixtures of the two halves, must be *soaked in*
“ *water* for twenty-four hours ; and then the other, re-
“ maining unsoaked, being again mixed with this which has
“ been soaked, the whole must be sown in the manner com-
“ monly practised. It must be observed, however, that the
“ whole quantity of seed used should be double to, or at
“ least one-third more than is commonly used. The con-
“ sequence will be, that the herb will rise from the seed,
“ so treated and sown, at several different times ; and the
“ fly will destroy one part of it, but there will be enough
“ left to afford a full crop.”

The principle, on which the effect of preserving the tender herb of the turneps from the fly depends, consists in two circumstances : the one of these circumstances is, that seed, which is of the same year, will spring out of the ground some days sooner than that which is of a former year ; and that such seed, as has been soaked for a considerable time in
water,

water, will rise sooner than such as has not undergone such soaking. The other of these circumstances is, that the fly will not destroy the herb of the turnep after it has attained a certain degree of growth, or strength; and that the youngest and tenderest herb will be preferred by it to that which is older, even to such a degree, that the one will be quitted and left for the other, when found near it.

Now it is very easy to apply this in accounting for the efficacy of the method above proposed; for the herb produced by that seed of the same year, which has been soaked, rises some days before any of the rest, and the fly falls upon and destroys a part of it; but the other part of the soaked seed, that is to say, that of the former year, then rising, the fly quits the first before it has destroyed the whole, and preys on this only. In like manner, before it has devoured the whole of this second rising, a third tempts it away, that is to say, the unsoaked part of the seed of the same year; and, before this is consumed, the fourth part of the seed, to wit, the unsoaked part of that of the former year, in like manner prevents a total destruction of the other. While this last, which affords a more pleasing repast than any of the rest can now do to the fly, takes it off from them, they gain a sufficient strength and growth to resist the mischief, when it would otherwise demolish them after having dispatched the last: and thus, by diverting, as it were, the enemy, by taking him off to new attacks, a sufficient quantity of the plants escape, and are saved from destruction, to supply a full crop when grown to due maturity*.

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* This method promises very well in speculation, but we wish it may answer as well in the practice. Is it certain that the soaked seed of the former year will come up before the unsoaked seed of the last year? or, as there are in their natural state several days difference in the time of their appearance, will not soaking the oldest seed bring them nearly upon a par? The principle, however, on which this practice is recommended, is undoubtedly good: we would therefore recommend it to our readers, to make the experiment, and communicate to us the result.

I cannot vouch the success of this method, as I observed before, from any actual trials; but it is certainly very ingenious, and seems so just in the principle, that I can scarcely doubt the efficacy of it: and I should therefore recommend it to your notice, especially as it is of so simple a nature, as to require very little trouble or expence. At least, it promises greatly more than any of the several methods laid, by the candidates for the premiums, before the Society; which were either credulous practices of soaking the seed in compositions, that had no relation to the end in view; or such methods as, though perhaps serviceable in some circumstances in a small degree, were yet very inadequate and uncertain, and, if not very cautiously managed, might do more harm than good. Amongst these the strewing of lime and ashes, so as to convey a small proportion of the dust of them over the tender plants, or the burning substances that afford an acrid smoke to the windward of the ground where the turneps grow, were the principal. In the use of lime and ashes, care must be taken to spread them very thin over the young herb: otherwise they would corrode it, and be as sure a means of destruction, as the fly itself: but if a very fine dust only be conveyed over it, this will not be the case; and if no heavy rain fall to wash the dust off, this practice will sometimes succeed very well*. The substances employed for burning, to raise a smoke for destroying the fly, have been usually either green wood, or weeds dried to a proper degree, or brimstone. The last is most effectual; but it is difficult to diffuse it over a large space of ground with sufficient strength to answer the end: and care must be taken not to augment it too much, in any particular place, lest the herb of the turnep itself suffer from it; which may easily happen while it is in this tender state: the expence, moreover,

* The strewing of coal-soot over a piece of young turneps, has, by experience, been found to be of great efficacy, as it not only renders the young plant disagreeable to the fly by its bitter taste, but also greatly helps the vegetation by its enriching qualities. N.

over, of this, is some objection, the quantity of brimstone necessary to produce any material effect being considerable. The method I have particularly explained above, seems therefore to promise much more than can be expected from either of these, and will, I hope, afford the means of preventing this great mischief attending the cultivation of turneps.

I will now endeavour to give you some satisfaction as to the second article you ask after, *viz.* the premium for a composition for marking sheep without injuring the wool, as is now done by the use of pitch. This premium, Sir, is not finally discontinued by the Society, but only a further publication of the advertisement suspended, on account of a claim at present undecided. The proceedings they have had, with regard to this matter, were as follow. The Society was induced to offer a premium for a composition for marking sheep, because pitch, which is now used on account of its cheapness, the facility of its being laid on the wool, and its durability as a mark, is not to be again cleansed out of the wool, by washing with hot water and soap, nor by any of the methods used in cleansing wool; and consequently spoils not only the wool of the part where the marks are made, but also that of any other parts which come in contact with it when the pitch is softened by it. This occasions the destruction, as is said, of an eighth of the whole of the wool of those sheep that are marked with it; the loss of which to the public has been, on the most moderate computation, deemed 40,000*l.* annually; and by some, a much greater, even up to 200,000*l.* This renders the matter a very considerable object, with respect to the public interest, and a very fit one of the Society's premiums; because there can be no doubt, but that a composition of cheap substances may be found out, which will have the properties required for this purpose; that is to say, be a durable mark, and yet wash out with hot water and soap: and if the Society should, by their encouragement, occasion such a discovery, it is presumed farmers, and other proprietors of sheep, would readily

dily use it; and it might probably be the means of a legal prohibition of the marking with pitch, which has not hitherto taken place in consequence of applications that have been made on that account, because nothing was at present known that would supply its place for marking; and the want of durable marks would produce such perplexities and trouble to those who are owners of great numbers of sheep.

However trivial, therefore, a premium for improvement in sheep-marking may seem at first view, to those who are not apprised of these circumstances, it was certainly one of the most judicious and momentous premiums the Society ever offered, though it has not hitherto had the desired success. The premium offered at first, for some time, by the Society, was, I think, only ten pounds; but it has since been advanced to fifty; which is yet much too small; and probably this is the reason why it has not been effectual. There have been, however, several candidates for each year it has been offered; all of which, excepting one, of which I shall give a more particular account below, have been rejected on trial. The means of trial, originally adopted by the committee to which this matter was referred, were, first to examine if wool could be cleansed perfectly from the marking substance, when laid on it, by washing it in hot water and soap; and if the composition appeared to answer well in this point, a skin with the wool on it was marked, and hung out in the air, exposed to the weather and the agitations of the wind, to try the durability of the mark. The compositions produced by the first sets of candidates all failed in one of these two points, and were consequently rejected; but the last year the premium was offered, some gentlemen, who were members, were not satisfied with this kind of trial, but obtained an order, that proof should be actually made of each composition, on the backs of living sheep ranging at large. On the reference of the compositions in claim of this last-advertised premium, the committee, therefore, again proceeded to try the washing in hot water and soap; in which all failed but one,

one, part of all the substances always adhering to the wool in spite of such washing. The one which stood this test was an earth of the ochrous kind, and therefore differed little from ruddle, and those other chalky substances that had been formerly employed, but are now disused on their inferiority to pitch with respect to the durability of the mark they make: but the committee, finding it stand this trial, determined nevertheless the further trial on the sheeps backs the Society had ordered; and a considerable quantity being procured from the candidate, it was distributed among a number of gentlemen to have it used on as many sheep as their respective portions of it would mark.

Of the success of this proof no regular account has ever been given to the Society by any of them; but some have occasionally mentioned in private the failure of it: and as matters postponed to distant and unfixed times are not taken up again in the committees, unless in consequence of something offered to the Society relating to them, or of special motions of some members to revive them, this matter sleeps at present, and possibly the renewal of the premium itself will be neglected. It were greatly to be wished, however, that such a composition were discovered, and either laid open to the public, or sold at a reasonable rate, by the discoverer, to persons who would again retail it in every part of the country; for as the price of wool depends on the plenty, and we have at present so great rivals in the woollen trade, the destruction of an eighth, or according to some, a much greater part of our whole produce, is a great detriment to our national commerce.

I have thus given you, Sir, the best information I can, as to two of the three subjects you have mentioned to me: the third, that is, the transactions of the Society with relation to the premium *for a preparation of taking rats alive*, with my own sentiments on that subject, shall be the contents of a future letter. I am,

Yours, &c.

To

To Y. W.

S I R,

HAVING before, in my last letter, given you an account of the transactions of the Society for the encouragement of arts, manufactures, and commerce, together with my own notions, respecting the methods for preventing the destruction of turneps by the fly, and the compositions for marking sheep without injury to the wool; I will now perform my promise of communicating to you what passed in the Society with respect to the premium for *a preparation for taking rats alive*, and my opinions concerning that matter.

The catching of rats may at first seem a trivial, perhaps even somewhat drole, affair for that Society to trouble themselves with, which have always the choice of so many articles, in appearance more important: but when it is considered, the loss to the public, by the destruction of corn alone, amounts to some hundred thousand pounds a year; besides that of many other commodities, subject to be devoured, or damaged, by them; and the very disagreeable domestic annoyance of these noxious creatures where they abound; it will appear a matter of serious moment; and it must be allowed, that if the offer of the premium had brought to light an effectual remedy to this evil, for the use of the public, a sum of 50*l.* could not have been better appropriated.

What the Society proceeded upon, in the particular means they employed to effectuate the purpose of obtaining a method of easily destroying rats, was this. It is in general believed, and many instances vouched in a general way, by persons of credit, to the Society, were offered in proof, that those, who professedly follow the art of rat-catching, have among them a secret for preparing some substance or composition which will allure all the rats, in or about any building, together to one place; and, in some way or other, will intoxicate or fascinate them so that they may be taken by the rat-catcher at pleasure: and it was therefore concluded,

cluded, that, if this secret was laid open to the public, any persons, whose granaries or houses were infested with these animals, might easily practise it, and free themselves from this mischief, without the necessity of seeking for, or employing, professed rat-catchers. This induced many gentlemen, and even some persons of quality, to be very earnest with the Society, to establish such a premium: and accordingly fifty pounds was agreed to be offered for a *preparation for taking rats alive*; it being presumed, that these words expressed best what was conceived to be the means used by those rat-catchers who appeared to practise their art with most success.

In consequence of advertising this premium, several candidates for it offered themselves, at the stated time, to the Society: and their respective claims were referred to the committee of *chemistry*, as being best judges of what was understood by the word *preparation*; that is, some substance, or composition of substances, which would allure, fascinate, or intoxicate the rats, so that they might be easily taken. On examining what was produced in support of the several claims, it appeared, that all the candidates had sent traps, or machines, of various forms and constructions; except one, who had only sent a letter describing a method, very far short, even in pretensions, of what the Society had in view. It was, however, a matter of debate, whether improved traps might not be deemed to come within the spirit and meaning of the advertisement, if they appeared to afford effectual means of answering this end: but the word *preparation*, together with the reference to the committee of chemistry, and not the committee of *mechanics*, who would have been the proper judges of traps as machines, made the intention of the Society in the advertisement so evident, that this, together with the too-well-known insufficiency of traps to free places from them which abound greatly with rats, easily cleared up this doubt; and the claims of all the candidates were rejected, as not being conformable either to the spirit or letter of the advertisement. The ill success of this offer of this premium, together with

the appearance of reason for doubts, I shall explain more particularly below : that there was not any known composition, or substance, which would so simply or easily take rats, as had been imagined at the time of settling this premium, occasioned the committee to recommend the discontinuance of it to the Society, who readily gave their assent to that measure, as well as to the determination concerning the claims of the candidates.

But, notwithstanding nothing adequate to what was proposed in offering the premium was obtained by means of it, yet on the discussion of this matter, and the examination of the various facts, produced as well by some of the candidates, as by gentlemen who attended the committees on this reference, several very material points of information, respecting this matter, arose to view ; as indeed will be generally the case on similar occasions. It appeared that no satisfactory evidence could be produced, of any of the rat-catchers being in possession of a secret, by which persons unpractised in such matters could easily allure, and bring together all, or a very great part, of the rats in or about any place, so as to destroy them in a short time ; but that this was done by the professed rat-catchers themselves, by the use of various arts and means, which they could, in consequence of a skill and dexterity acquired by long practice and experience, put in execution ; as fishermen and bird-catchers do their methods of taking fish or birds : but which arts and means could not, nevertheless, be performed or applied, with like advantage, by persons not habituated to, or familiarly acquainted with them ; nor be effectually communicated by verbal instruction, or brief description in writing, any more than other arts, or crafts, that are easy to those properly trained to them.

It was evident, from the relations of different gentlemen, of what they had seen, that the most able of the rat-catchers themselves had different methods from each other, which were yet equally successful : and it seemed to appear, from several circumstances, that some of them joined divers unnecessary proceedings to the essential part of their operations,

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for the fake of parade, and to hide, by the perplexity of mystery, the useful part of their art.

As those who practise rat-catching for their livelihood are not many in number, nor always at hand, and not having constant employment, are obliged frequently to seek it at a considerable distance, their pay must consequently be in proportion ; and frequently they are not within reach at all where most wanted : it would be well for the public, therefore, if some labourer, or handicraft-man, in every town or large village, was made tolerably master of this art, and would exercise it, as he well might, at a lower rate than the professed rat-catchers ; as such assistance would be of great consequence to numbers of farmers, and others, and check the great increase there is at present found of these very destructive animals ; while, at the same time, such a man, having some other business to fill the intervals of his not being employed in this, might, at a very moderate price, make it well worth his while.

That you may promote something of this kind in your own neighbourhood, I will give some hints of the principal means, by which the rat-catchers are able, in three or four days time, or sometimes less, to clear a house, and even the out-buildings, of the greatest part of the rats frequenting it.

The first step taken is, to allure the rats all together to one proper place, before they attempt to destroy them ; for there is such an instinctive caution in these animals accompanied with a surprising sagacity in discovering any cause of danger, that, if any of them be hurt, or pursued, in an unusual manner, the rest take the alarm, and become so shy and wary, that they elude all the devices and stratagems of their pursuers for some time after. This place, where the rats are to be assembled, should be some closet, or small room, into which all the openings, but one or two, may be secured : and this place should be, as near as may be, in the middle of the house, or buildings. It is the practice, therefore to attempt to bring them all together to some such place, before any attempt be made to take them ; and, even

then, to avoid any violence, hurt, or fright to them, before the whole be in the power of the operator.

The means used to allure them to one place are various : one of those most easily and efficaciously practised is, the trailing some piece of their most favourite food, which should be of the kind that has the strongest scent, such as toasted cheese, or boiled red-herring, from the holes or entrances to their recesses in every part of the house, or contiguous buildings, whence it is intended to allure them. At the extremities, and in different parts of the course of this trailed tract, small quantities of meal, or any other kind of their food, should be laid, to bring the greater number into the tracts, and to encourage them to pursue it to the center place, where they are intended to be taken : at that place, where time admits of it, a more plentiful repast is laid for them, and the trailing repeated for two or three nights.

Besides this trailing, and way-baiting, some of the most expert of the rat-catchers have a shorter, and perhaps more effectual, method of bringing them together ; which is, the calling them, by making such a kind of whistling noise as resembles their own call ; and by this means, with the assistance of the way-baits, they call them out of their holes, and lead them to the repast prepared for them at the place designed for taking them. But this I apprehend much more difficult to be practised than the art of trailing ; for the learning the exact notes, or cries, of any kind of beasts or birds, so as to deceive them, is a peculiar talent, which I have seldom seen attained to in other cases ; though I have known some few persons who could call together a great number of cats : and there is now one man in London, who can bring nightingales, when they are within hearing, about him, and even allure them to perch on his hand, so as to be taken.

In the practising either of these methods, of trailing or calling, great caution must be used, by the operator, to suppress and prevent the scent of his feet and body from being perceived ; which is done by overpowering that scent by others of a stronger nature. In order to this, the feet are to be covered

vered with cloths rubbed over with *assa foetida*, or other strong-smelling substances; and even *oil of Rhodium* is sometimes used for this purpose, but sparingly on account of its dearness, though it has a very alluring, as well as disguising effect, as will be observed below. If this caution of avoiding the scent of the operator's feet, near the track, and in the place where the rats are proposed to be collected, be not properly observed, it will very much obstruct the success of the attempt to take them; for they are very shy of coming where the scent of human feet lies very fresh, and intimates, to their sagacious instinct, the presence of human creatures, whom they naturally dread. To the above-mentioned means of alluring by trailing, way-baiting, and calling, is added another of very material efficacy, which is the use of *oil of Rhodium*, which, like the *marum lyriacum* in the case of cats, has a very extraordinary fascinating power on these animals. This oil is extremely dear, and therefore sparingly used. It is exhaled in a small quantity in the place, and at the entrance of it, where the rats are intended to be taken, particularly at the time when they are to be last brought together, in order to their destruction; and it is used also, by smearing it on the surface of some of the implements used in taking them by the method below described: and the effect it has in taking off their caution and dread, by the delight they appear to have in it, is very extraordinary.

It is usual, likewise, for the operator to disguise his figure as well as scent; which is done by putting on a sort of gown or cloak, of one colour, that hides the natural form, and makes him appear like a post, or such inanimate thing; which habit must likewise be scented as above, to overpower the smell of his person: and besides this, he is to avoid all motion, till he has secured his point of having all the rats in his power.

When the rats are thus enticed and collected, where time is afforded, and the whole in any house and out-buildings are intended to be cleared away, they are suffered to regale on what they most like, which is ready prepared for them, and then to go away quietly for two or three nights; by
which

which means those, which are not allured the first night, are brought afterwards, either by their fellows, or the effects of the trailing, &c. and will not fail to come duly again, if they are not disturbed or molested. But many of the rat-catchers make shorter work, and content themselves with what can be brought together in one night or two; but this is never effectual, unless where the building is small and entire, and the rats but few in number.

The means of taking them, when they are brought together, are various. Some entice them into a very large bag, the mouth of which is sufficiently capacious to cover nearly the whole floor of the place where they are collected: which is done by smearing some vessel, placed in the middle of the bag, with oil of Rhodium, and laying in the bag baits of food. This bag, which before lay flat on the ground with the mouth spread open, is to be suddenly closed when the rats are all in it. Others drive, or fright them, by flight noises or motions, into a bag of a long form, the mouth of which, after all the rats are come in, is drawn up to the opening of the place by which they entered, all other ways of retreat being secured. Others, again, intoxicate or poison them, by mixing with the repast prepared for them, the *coculus Indicus*, or the *nux vomica*. I have seen a receipt for this purpose, which directed four ounces of the *coculus Indicus*, with twelve ounces of oatmeal, and two ounces of treacle or honey, made into a moist paste with strong-beer; but, if the *nux vomica* be used, a much less proportion will serve than is here given of the *coculus*. Any similar composition of these drugs, with that kind of food the rats are most fond of, and which has a strong flavour, to hide that of the drugs, will equally well answer the end. If, indeed, the *coculus Indicus* be well powdered, and infused in the strong beer for some time, at least half the quantity here directed will serve as well as the quantity before mentioned. When the rats appear to be thoroughly intoxicated with the *coculus*, or sick with the *nux vomica*, they may be taken with the hand, and put into a bag or cage, the door of the place

being first drawn to, lest those who have strength and sense remaining escape.

By these methods, well conducted, a very great part of all the rats in any farm, or other house, and the contiguous building, may be taken. But it requires experience and observation to perform them well; and there may be circumstances known to the most skilful of the rat-catchers, which, if intelligibly communicated, though they would not enable a person without practice to manage this affair completely, would yet greatly assist, and render it more easy to be attained. It would, therefore, be an object worthy the attention of the Society, to procure the public the most perfect information that can be obtained; to which end the premium should not be confined, as before, to a preparation for taking rats alive; but offered *for the most easy and effectual method for taking rats, without the use of baited traps in the common way*. The premium should be also greater than before; for fifty pounds is not a consideration for a man to lay open his art, so as to stir rivals, that may deprive him of part of his business; or lower his pay. A noble lord, who was before a zealous promoter of this premium, was desirous last year to have advanced a hundred pounds, if the Society would have joined another to it, to have made up the sum of two hundred pounds for this purpose; but, from some accidental neglect, the proposal was never publicly made to the Society; though it is to be regretted, that this generous intention was not pursued, and something further attempted by the Society

I have now acquitted myself of my promise, as to the three articles you mentioned to me. If there be any others which you are inquisitive about, that lie within the reach of my knowledge; on your pointing them out to me, I shall be equally ready to impart all I can: and you are at full liberty to communicate all I write to whomsoever you please.

I am, SIR,

Yours, &c.

NUM.

NUMBER LXXXIX.

To the Editors of the Museum Rusticum, respecting the raising Ananas.

GENTLEMEN,

IN page 179, No. XXXVII. you have published a letter signed J——C——, dated S——n, June 10, 1763, in which the gentleman says, that he finds, by experience, that he can raise ananas, or pine-apples, much cheaper and better than they are to be had in the London markets.

As it is impossible to direct a letter to the gentleman himself, you are desired to insert this in some future Number of your *Museum*; by which that gentleman may understand, that if he will be so good as to communicate, in your *Museum*, his method of raising ananas *, he will do a very acceptable service to the public in general, and in particular to,

GENTLEMEN,

Your most obedient humble servant,

Milton, near Abingdon, Berks,
Jan. 5, 1764.

JAMES WARNER †.

* We could wish, for the satisfaction of our correspondent, that we had it in our power to make a personal application to Mr. J——C——; but as he is unknown to us, we must be content with inserting this letter. N.

† If this gentleman will now and then favour us with his sentiments, it will much oblige us. O.

Museum Rusticum, &c.

For FEBRUARY, 1764.

THE THIRD EDITION,

Revised and corrected by the EDITORS.

NUMBER XC.

A Letter to the Editors, from Mr. Thomas, respecting M. D'Ambourney's Method of using the Madder-Root, green and undried, for the Purposes of Dying.

GENTLEMEN,

I HAVE read with great attention, the several pieces you have till now published in your collection, and cannot but acknowledge to have received great pleasure in the perusal of them.

Your correspondents are a set of public-spirited men, and I hope these their voluntary labours will prove of service to our country.

The widow's mite was not rejected: permit me then to contribute a small share towards the national emolument.

I could not but take particular notice of a piece marked No. XXIX. page 147, being a letter from a member of the Society of arts, hinting at a method of extracting and preserving the colour of the madder-root.

I have several times resolved to write to you on the subject, but was, till now, by various avocations prevented:

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3 F

I was,

I was, however, lately agreeably surpris'd to find that a very sensible gentleman, who dates his letter from Manchester, No. LVIII. page 248, has made some observations on the same passage in the first-mentioned letter, which particularly attracted my notice, *The possibility of using the madder-root green for dying.*

Your last-mentioned correspondent says, he knows of no objections that can be made against the use of it this way, if our dyers could possibly receive it from the hands of the planters in this condition, without any danger of its fermenting and putrefying before it could reach them.

The method hinted at of using this root was, I am apt to think, that invented by M. D'Ambourney, a gentleman of *Normandy*. I am very glad to have it in my power to lay before your readers his method more at large, as it will probably be a means of removing many objections that would be of course rais'd against the practice.

It will be necessary first to premise, that this gentleman has made more improvements in the culture of madder, than any man in France besides; and has convinced his countrymen of the practicability of drying madder, taken up in the spring, in the sun, or by the assistance of the air, under cover, without the help of a stove or kiln.

However, in the course of his improvements in the culture of this plant, he found, by experience, that the sets sowed from the roots taken up in spring, and planted in that season, did not take well, the dryness of the summer preventing their thriving.

This induced him, when he wanted to make a new plantation, to take up in the autumn as many roots as would furnish him with the number of sets he wanted; but the season at this time not permitting him to dry the roots without fire, it struck his imagination, that the expence of drying might still be saved by using them green: this thought it was induced him to make the experiment, which succeeded to admiration.

The roots were taken up in October. M. D'Ambourney first caused them to be well washed, that no loose earth might remain hanging about them; and as experience had
con-

convinced him that the madder in drying loses seven-eighths of its weight, he proportioned his quantity accordingly: in a vat that would require one pound of dried madder in powder, he put eight pounds of green root bruised in a mortar: in this he dyed some cotton in the usual way, when he found the liquor still highly charged with colour; the cotton was greatly over dyed, and he was obliged to back-boil * it twice to bring it to the customary colour.

M. D'Ambourney then tried six pounds of the root, and afterwards four pounds, which last quantity he found yielded a colour of the same shade as that produced by a pound of common dry madder in powder.

By using madder-root green for dying, half the quantity is saved; but this is not all the saving.

First, There is no necessity for building kilns to dry the root.

Secondly, The danger of over or under drying the root is avoided, both which are a detriment to the colour.

Thirdly, There is not near so much waste in this method as in the other.

Fourthly, The frauds committed in pounding it are avoided, as well as the inconvenience of waiting till the mill is at liberty.

Fifthly, The danger of the root getting damage, or fermenting, after it is pounded, is also avoided, which is always the case when it is kept too long.

All these matters considered, M. D'Ambourney thinks we may estimate the saving at five-eighths of the consumption.

Should this method be brought into use, the planter, if he is acquainted with the method, may himself use the root in dying as soon as he has taken it up; or he may carry what quantity he thinks proper to market, where

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the

* A practice much used among the dyers: it signifies boiling the stuff after it has been dyed to discharge a part of the colour; for which purpose they make use of salt-petre, aqua-fortis, argol, &c. Back-boiling is supposed to brighten the colour.
R.

the dyers will, for their own sakes, be induced to buy it, as they may either be supplied with it fresh and fresh, or buy a quantity at a time, and keep it in a repository in their cellars ; M. D'Ambourney having discovered, that it will keep a considerable time, as I shall just now particularize, when laid up with proper precautions.

An attention to this matter would, probably, soon reduce the price of many of our manufactures, and thereby, of course, encrease our foreign trade.

But to return to the very ingenious M. D'Ambourney. This gentleman, ever attentive to his country's good, in the latter end of the year 1761, endeavoured to find some method of preserving the madder-root, after it was taken up, without the expence of drying it; accordingly, on the 6th of October, he caused a hole, three feet deep, to be dug in his garden, in which he laid thirty madder-plants ; and the hole being again filled, he left it exposed to all weathers.

On the 30th of March, in the following year, this hole was opened, when the roots were all found in good condition. It was again filled, and left till the 15th of September, when the roots, even the runners no bigger than quills, which had been broken and separated from the plants, were as firm and as sound as when they were first deposited there.

But this ingenious enquirer into nature was not satisfied with this first ocular demonstration ; he was determined to try whether there might not be in them some defect which might escape even his curious eye : accordingly he dyed some stuff with them, and found no difference, in the brightness and strength of the colour, from what was dyed with some fresh roots he had taken up for the experiment.

I cannot but think this a great acquisition, both in husbandry and the art of dying, as the planter may now, if he pleases, keep his crop of madder the year round without any danger of its spoiling ; being attentive, however, to observe M. D'Ambourney's method, which is to make, in the trench, alternate layers of roots and earth. He may, by this means, make the most of the produce of his lands, and wait till a favourable opportunity offers of making his

market; and not be, as is often the case in perishable commodities, the dupe of the buyer.

The dyer also, who is friend enough to himself to adopt this method of using the green root, may buy this necessary ingredient in considerable quantities, keeping it in his cellar with alternate layers of sand, or dry earth.

M. D'Ambourney's method of dying with the green root is as follows. It has already been observed, that the dirt is to be washed off, and that four pounds of green root are to be used where one of Dutch madder would be sufficient.

The root is then to be chopped moderately small, and bruised, either in wooden, marble, or stone mortars, (for iron is absolutely to be excluded, for fear of injuring the colour) till it is reduced to a kind of pulp. It must then be thrown into the boiler, when the liquor is somewhat more than luke-warm; to put in the root too hot would be hurtful.

The tincture is then to be heated till you can scarcely bear your hand in it, at which time the stuff is to be put in, which is to be wrought in it for three quarters of an hour, the tincture being kept simmering, or just upon the boil; after which it is, for the next three quarters of an hour, permitted to boil; when the stuff is taken out, and managed as usual.

I would recommend the above particulars to the attention of your Manchester correspondent, who, living in a town so considerable for many manufactures, may have an opportunity of making, either by himself or friends, the experiment, provided any madder is cultivated in that neighbourhood, of which circumstance I own myself ignorant: I should be glad the above gentleman, I mean the author of the letter marked No. LVIII. would favour your readers with his farther thoughts on the subject; it is very interesting, and frequent discussions of this point may be productive of something truly useful.

I shall take up no more of your time at present, but conclude myself,

GENTLEMEN,

Your very humble servant,

W. THOMAS.

N U M.

London,

Jan. 3, 1764.

NUMBER XCI.

A Letter to the Editors, on the Method of procuring fine Flax.

GENTLEMEN,

I Must beg leave to set your correspondent, who signs himself *A Man of Sussex*, No. XXXVI. right in one particular, in which I am apt to think he is mistaken.

In treating of the manner in which they raise flax about *Winchelsea*, for the fabricating of cambrics, he says, p. 175. that, in order to promote the growth of the plants, the “planters stick the crop very full of long sticks; and on these they lay bushes, which, *shading the plants from the intense heat of the sun-beams*, make them run up very slender.” I candidly acknowledge I never saw flax grow in *Sussex*: but as your note tells me it is raised in the same manner in *Ireland*, I think I can explain it, having in the north of that kingdom seen it raised, for fine yarn, in the following manner.

When flax is sown on rich land very thick, it is apt to be tall and slender, and would, without support, be very subject to lodge: to prevent this, the planters fix forked sticks in the ground at regular distances, in the forks of which they lay poles, so that the plots of flax appear formed into squares. These poles support the plants much in the same manner I have seen rows of onions, planted for seed, supported by cords.

Your correspondent above-mentioned perhaps wrote his account from information; or if he saw the flax growing, he must have taken but a cursory view of it.

London, Jan. 2,
1764.

Your's, &c.

HIBERNICUS.

NUM-

NUMBER XCII.

A Letter to the Editors, on the Method of burning Clay, and on the Benefit of it when used as a Manure.

GENTLEMEN,

AS you seem desirous of having an account of whatever may be advantageous to the public, I have transmitted you one of a manure, which I found very beneficial; which you may either publish, or not, as you think proper.

I observed our lands, (for I then lived in a wet clay country) after having borne three crops of corn, which is the common method of husbandry in those parts, produced good quantities of grafs for two or three years; after which the ground began to *sadden*, and then the produce diminished, and rushes grew in abundance.

This led me to think, that whatever would contribute to keep the particles disunited would be of great service; and further, I imagined, that clay or soil burnt would never re-unite; which proved a fact: moreover, that the salt it gained by passing through the fire would enrich the land, which appeared from its produce when *denshired* *; though I never approved of that husbandry, as the soil was thereby diminished, which is already too thin in that country. This determined me to attempt burning clay, which I did in the manner following.

I caused a labourer to dig as much clay as made a number of walls of nine inches high, and of the same thickness, and the same distance from each other, in a parallel direction, as would make about a square of three yards: these vacancies, being like tunnels of brick-kilns, I filled with brushwood, and on that threw some cinders, or small-coal, of which I had sufficient quantities, then living nigh some collieries;

* *Denshiring*, or *burnbaiting*, can very seldom be practised without injuring land, unless the soil happens to be very deep, so that it may be renewed by deep plowing. R.

lieries; after which I covered the whole square with clay about three inches thick, leaving the ends of the tunnels open, which I then lighted on the windward-side: as soon as the fire had got sufficient head, I stopt the mouths of them; and when I perceived the covering was almost burnt through, I had a small sprinkling of cinders, or small-coal thrown on the heap, and then another covering of clay of the same thickness; and thus I went on till my fire was seven or eight feet high.

When I found my fire was very well kindled, which was commonly about the time I put my second coat on, I used to enlarge the base of the fire, by continuing the tunnels, and by adding new ones to the sides, (which were filled and covered as the others, and then lighted) till I made my fire about seven yards square; for I soon found it never burnt well in the middle if it was so large at first.

Care should be taken the labourer does not put on too thick a coat at once, as it will be apt to smother the fire: besides, by confining the heat in too much, the clay was apt to run and vitrefy, which was then of little use.

As soon as the heap was sufficiently cool (for the sooner it is laid on the land the better) I put about ten large cart-loads on a statute acre, and found it an admirable manure for either meadow, pasture, or corn: for the latter it will not last more than three crops, though longer for the two former: and with this I have made prodigious improvements: but I don't believe it will answer for a sandy soil, as it will render it still lighter*.

This manure I burnt all times of the year, though slower in the winter than summer, but always fastest in windy weather†.

This

* It is very certain that burnt clay, used as a manure, makes land lighter, by disuniting the particles, before possibly too compact; it therefore stands to reason, that it is not so proper for light porous soils: this manure also warms and invigorates land, raising in it a slight fermentation, thereby disposing it to part with its vegetative virtues. R.

† There cannot be a better or more simple method of burning clay than that used by our correspondent: as such we therefore recommend it to our readers, R.

This, I fancy, may be burnt with brush-wood, or furze only; which I apprehend may answer better between the coats than coal, as it will keep the clay more open.

In your work, in the piece marked No. XIII. page 68, I find brine is recommended for preserving gravel-walks, &c. from weeds; but *with you*, I apprehend, the expence will be too great to do large gardens: I think a solution of copperas, which in itself is cheap, might answer that purpose; though as yet I have never made a trial of it.

I have sprinkled founders-earth on gravel-walks, which answered in keeping down the weeds, but gave them a disagreeable blackness, till the rains had washed them in*.

If any thing in this should be of service to the public, I shall think myself sufficiently paid for my trouble†.

I am, GENTLEMEN,

Your most obedient humble servant,

Jan. 25, 1764.

A SINCERE WELL-WISHER.

N U M B E R X C I I I .

A Letter to the Editors, on the great Benefit of Furze as Food for Horses, &c.

GENTLEMEN,

HA V I N G a horse which had been over-worked, to the appearance of a surfeit, I treated him in the usual manner for that disorder; and knowing how necessary it would be to his speedier recovery to give him green food after his physic, it occurred to me that furze might answer the purpose immediately, as there could be none of the common herbage procured before the end of April at soonest: I therefore had a quantity of the tops and tenderest parts of that plant cut daily to preserve it fresh,

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which

* If founders earth will keep down the weeds in gravel, the blackness might easily be removed, by watering them, without waiting for rain; it could be no very great expence. R.

† This correspondent's future favours would oblige us. R.

which I hatched upon a block, with a very long and heavy chopping-knife, as small as possible, and then beat it again over the same block with a carpenter's mallet, (which blunted in a great measure the sharp prickles) and gave half a peck a day of it to the horse, (in the stable) which eat it most greedily, and received so much benefit from it, that he is totally recovered, and carries a very fine coat.

The success of this experiment led me to consider the great utility this plant may be of to poor people, who live in the neighbourhood of large commons over-grown with it, as food for cows in winter when fodder is dear, and in reality not so proper for milch cattle as this green food, which must naturally encrease their milk, and from the fragrant smell it sent forth while cutting, it may reasonably be conjectured, will give no ill taste to it, as many vegetables do *.

I remember to have read, in a Magazine last year, that a gentleman in Wales had invented a mill, of a very simple construction, to reduce the furze to a state proper to give cattle : it is therefore to be wished that gentleman would communicate to the public the manner of constructing his mill, which would be for the benefit of many poor families, and others, whose particular situations may enable them to use it.

I have thrown these few loose hints together for your inspection, and, if you may think them in any wise useful, to insert them in the next number of the *Museum Rusticum*, which is a work I heartily wish success to, as it affords an easy channel to communicate detached experiments in agriculture

* We must refer our readers to No. XXV. of our collection, where they will find furze treated of as a green fodder much used in Wales, and recommended for culture in proper places where land is not too dear ; but as sheep, rabbits, hares, &c. destroy young furze when in its first tender leaves, being very fond of it, the land should be well fenced with close hedges, or the farmer cannot promise himself success in raising this crop. E.

culture to the public *, and may be the means, in time, of bringing that hitherto-neglected, though most useful art to some degree of perfection; which has till now been confined to poor, or illiterate people, though deserving the study and attention of the wisest, and those of the most opulent fortunes, who will not feel the ill success which may attend the failure of an experiment, and would deter a person of a confined fortune from a further pursuit.

I am, GENTLEMEN,

Your very humble servant,

Surry, Jan. 14. 1764.

RUSTICUS.

NUMBER XCIV.

A Letter to the Editors, relating two curious Methods of propagating Trees.

GENTLEMEN,

AMONG the various methods of propagating trees, the *two* following, being somewhat singular, may perhaps be thought not unworthy of a place in some future Number of the *Museum Rusticum*.

The *first* is Mr. Barnes's method of propagating trees by the bud and branch, as follows.

“ Every leaf upon the branch of a tree or shrub, has
 “ usually a young bud in its bosom; and it is certain each
 “ of these buds has in it the rudiment of a tree of the same
 “ kind: therefore it appeared reasonable to think that every
 “ branch might afford as many new plants as there were
 “ leaves upon it; provided it were cut into so many pieces,
 “ and a proper dressing was found to prevent the raw ends
 “ of each piece from decay. The best mixture for this

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“ pur-

* This correspondent seems to enter into the full spirit of our undertaking: a continuance therefore of his communications will oblige us much. E.

“ purpose, upon careful and repeated experience, I have
 “ found to be this,

“ Melt together, in a large earthen vessel, two pounds
 “ and a half of common pitch, and half a pound of tur-
 “ pentine. When they are melted, put in three quarters
 “ of an ounce of powder of aloes ; stir them all together ;
 “ and then set them on fire : when it has flamed a moment,
 “ cover it up close, and it will go out : then melt it well,
 “ and fire it again in the same manner : this must be done
 “ three times. It must be in the open air, for it would fire
 “ a house ; and there must be a cover for the vessel ready.
 “ After it has burnt the last time, melt it again, and put
 “ in three ounces of yellow wax shred very thin, and six
 “ drachms of mastich in powder. Let it all melt
 “ together till it is perfectly well mixed ; then strain
 “ it through a coarse cloth in a pan, and set it by to
 “ cool.

“ When this is to be used, a piece of it must be broke
 “ off, and set over a very gentle fire ; it must stand till it
 “ is just soft enough to spread upon the part of the cutting
 “ where it is wanted ; but it must not be very hot. It is
 “ the quality of this dressing, to keep out wet entirely : the
 “ part which is covered with it will never decay while
 “ there is any principle of life in the rest, and, this
 “ being secured, nature will do the business of the grow-
 “ ing.

“ This I have found true in practice, and by repeated
 “ trials, in more kinds than one, I have found that I could
 “ raise from any piece of a branch as many good plants as
 “ there were leaves upon it.”

The *other* method relates only to the propagation of the
English elm, by grafting it upon the *Dutch*. This method
 has been practised for some time by a gentleman in *this*
 neighbourhood, who has found it to succeed very well ;
 the elms growing much faster than in the common way,
 and the timber being equally good.

As I myself have *lately* made *both* these experiments, and *hitherto* with success, I hope the communication of them will not be thought impertinent * in,

S I R,

Aynho, Jan. 26, 1764.

Your humble servant,

W. T. B.

NUMBER XCV.

A Letter to the Editors, relative to the Management of Horses employed in the Works of Husbandry.

GENTLEMEN,

UNdoubtedly the horse is the most useful creature we have: it is therefore well worth our while to be attentive to his health.

I have always had a particular regard for this noble animal, and it has been my constant endeavour to make his necessary servitude as easy and comfortable to him as possible.

Horses are naturally lovers of liberty, and we ought in gratitude to allow them as much of it as is consistent with the work we should reasonably expect from them.

Most of the disorders to which they are subject arise from the too great restraint they are kept in †. What can be

* By the last paragraph of our correspondent's letter, we should judge that he has *so lately* tried these methods of propagation, as not to be able to ascertain their success from his own experience: we should therefore take it as a particular favour if he would, from time to time, acquaint us with the progress of the vegetation in his experiments, that we may be enabled to judge, from his report, whether the methods he mentions are so far practicable as to be easily brought into use. O.

† We agree with our correspondent in this point, and think horses should have more liberty allowed them, where it is in any

be harder than, after working them eight or nine hours, to tie them up with a halter in a stall not more than four feet wide, and perhaps seven or eight long, there to remain for the rest of the day and night? whereas, had they their liberty, at least a reasonable share of it, allowed them, they would much sooner recover their fatigue, and enjoy by far a better share of health.

This I know to be a fact from my own experience; for I never keep my horses confined in a stable, winter or summer, and find great benefit from this practice; for my horses seldom ail any thing, are not subject to coughs and colds, and last me more years than my neighbours.

I have two fields of ten acres each near my house, and I have a stable built so as to afford a ready entrance into each field.

In these closes I let my horses range alternately, in each a year at a time; and I have always one of the fields either in wheat or barley, with both which crops I sow a small sprinkling of clover; and in this manner they pay me very well.

I do not depend much on the pickings my horses get of the clover, though it is of some service to them: for they are always regularly fed, winter and summer, in the stable, where I have, for that purpose, a rack and a manger properly fixed.

Their general food is, in summer, green fodder mowed fresh and fresh, and laid for them in the rack; and this consists of either clover, saintfoin, or good meadow grass: they have besides a proper allowance of corn, which is always proportioned to the work they do, and the condition they are in; and I do not confine them to oats alone, but allow a variety of beans, peas, tares, oats, barley, and even small wheat, and sometimes rye. I find by this management they
eat

any sort convenient: in large cities this cannot be done; they may however be now and then supplied with green fodder, which would be of great service. O.

eat their meat heartier, and with a better appetite, and their health is much better preserved *.

In winter I allow them a moderate quantity of good sweet hay; but the greatest part of the corn they eat in this season is given them unthreshed, which is an excellent method: it saves hay, as they necessarily eat a great deal of the straw or haulm with it, and their appetites are thereby constantly kept up, and they do their work with cheerfulness: besides, this way of feeding prevents your plowman from giving them more corn than they ought to have, and from starving three or four horses to make one uncommonly fat, which he happens to take a particular liking to.

The stalls in my stable are constantly kept well littered, that the horses may lie down, either by night or by day, at their ease; and they generally prefer lying in these stalls to sleeping in the open air, in summer because the flies are there less troublesome, in winter because they find it warmer, and are not so much exposed to the inclemency of the weather.

By the practice of this method with my horses, none of them are ever troubled with greasy heels, which chiefly proceed from their standing too long in the same posture without exercise. In the ordinary way of managing horses, they are always either hard at work, or standing still: this must of course be unwholesome, and a mean is necessary betwixt the two extremes. A moderate exercise is always wholesome to animals; and if you give a horse the liberty of ranging at will over a few acres of land, nature will prompt him to be as much in motion as is necessary for his health.

Many have asserted that the haulm of peas and tares are unwholesome food for horses, but I never found them so. I know however that they are not good, in too large quantities,

* We have known many gentlemen practise this method of permitting their horses to range at liberty over a few acres: it is certainly conducive to their health; on which account we recommend it. Our correspondent's other remarks on the management of this generous animal seem very worthy of notice. O.

tities, for horses that are kept confined in a stable; but let them have the use of their limbs, and this fodder will do them no injury.

I imagined that in such a work as yours, a hint or two for the benefit of so noble an animal as the horse could not but be proper: this induced me to write, and this will, I hope, induce you to give a place for my letter in your collection: it is but short, and that may probably be a part of its merit; though too much cannot be well said on a good subject, especially if it is properly said. How far I have been guilty of impropriety, yourselves must be judges: I have related such facts as I have myself experienced, and which will stand the test of future trials.

Derby,
Sept. 2, 1763.

Your humble servant,
A COUNTRY FARMER.

N U M B E R X C V I.

A Letter from a Member of the Society for promoting Arts, &c. to Dr. Templeman, their Secretary, being a Comparison of the Hainault Scythe with that used by the Ancients.

S I R,

PLINY in his Natural History, book XVIII. chap. xxviii. describes two sorts of scythes; the one used in Gaul, the other in Italy; and by his description the Hainault scythe appears to be the very identical one described by Pliny: it will more particularly be confirmed by the different manner of using it, and the benefit of it above the other, if you will examine the 30th chapter of the same book, where you will be surpris'd to see the several manners of working the straw in thatching, &c. and that this scythe cuts close to the ground, and the other cuts the corn and grass but half off, &c. &c.

The different manners of the operation of the Hainault scythe, and the sickle, may be thus intelligibly expressed; the first *backs* as a bill, the second *crops* as a hook, and

and the common scythe for grafs *shaves* as a razor *.

If we look into the Grecian history, we may find, amongst the earliest accounts of that nation, that Ceres, a woman of Sicily, about the year before Christ 1030, (according to Sir Isaac Newton, in his Chronology, p. 15.) comes into Attica, and there teaches the Greeks to sow corn; for which benefaction she was deified after death: she first taught the art to Triptolemus, the young son of Celeus, king of Eleusis. Agreeable to this fact, Pliny tells us, lib. VII. c. lvi. that Ceres was the first that shewed the way of sowing corn; whereas, before, men lived on mast: she taught also how to grind corn, to knead dough, and make bread thereof, in the land of Attica, Sicily, and Italy: for which benefit to mankind she was reputed a goddess.

I do not, by this passage, suppose Ceres or Triptolemus to be the *inventor* of the sickle, as some have done; for it is plain the Greeks knew what corn was before that time, though they raised it not; for the same great author says, p. 171.

“ Lelex might come with his people into Laconia, in the
“ days of Ely, and leave his territories to his sons Myles,
“ Furotus, Clefon, and Polycon in the days of Samuel.
“ Myles set up a *quern*, or hand-mill, to grind corn, and
“ is reputed the first among the Greeks who did so; but he
“ flourished before Triptolemus, and seems to have had his
“ corn and artificers from Egypt.”

Many other authors take notice of the same things Pliny has mentioned above, *viz.* Cato, cap. liv. Varro, iv. c. 31. Columella, lib. XII. c. xviii. lib. II. c. xxi. Cicero, v. Tusc. 65. Ovid, xiv. Metam. line 628. xiii. Metam. l. 934. vii. Metam. l. 227. i. Epist. l. 33. i. Amor. 15. 12. Tibul. i. 4. 8. Virgil. Georg. i. l. 348. iv. Æneid. l. 543. ii. Georg. l. 365.

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* We are very particularly obliged to this gentleman for communicating to us the above letter for publication: any future favours from the same hand will do us honour. This letter was read before the committee of agriculture, and greatly approved of. E.

But the earliest account is to be found in the Pentateuch, Deuteronomy, cap. xvi. ver. 19. and again, cap. xxiv. ver. 25.

I have not time to transcribe the passages for you ; but if from these references you will consult the originals, you will find there what I say.

I cannot, however, omit mentioning here another passage, which shews the importance of this sort of knowledge, which I met with in Voltaire's Life of Peter the Great, lately published in two vols. octavo ; where he says, (see the French edition, vol. i. p. 76.) " L'agriculture même, qui
" est le premier mobile du tout, étoit néglagée, elle exige
" du gouvernement de l'attention, et des encouragements,
" et c'est ce qui a fait trouver aux *Anglois* dans leur *bleds*
" un tresor superieur a celui de leurs laines *."

I am, &c.

Y. Z.

N U M B E R XCVII.

A Letter to the Editors on the Culture of Coleseed in the Fen Countries, from a practical Farmer.

GENTLEMEN,

AS you give a general invitation, please to accept my little knowledge in agriculture ; if it prove acceptable to you, and of service to the public, my end is entirely answered : but I must first desire you will excuse all inaccuracy and false grammar.

It is not to be expected that practising of working farmers can be supposed to be scholars ; for most farmers, soon as their children become useful, instead of sending them to school, send them to drive plow, or other necessary business in

* Even agriculture, on which the well-being of the state depends, is neglected : it requires attention and encouragement from the government, and it is this care has occasioned the *English* to find a greater treasure in their corn, than they have long possessed in their wool.

in that way of life ; which is the sole reason that so useful a set of men are so unconvertible on every other subject, and even in their own business, unless they may be allowed their own technical terms, which to gentlemen are so uncouth, that it is almost impossible that the true practice of agriculture can be made known ; as the one, for want of a proper style to make known his knowledge ; so, on the other hand, gentlemen who abound in literature want the knowledge of practice ; that from these two extremes it is very difficult to come at a certainty : however, I shall make no further apology, but come immediately to the subject I intended *.

I have read your *Musenm Rusticum*, &c. In a piece marked No. LIV. page 237, signed S. T. from Witham in Essex, I find the culture of coleseed. As different countries have different methods, I will give you an account of the culture of coleseed in the fens.

I live in that part of the fens called Bedford Level, and have sown many acres of coleseed, and have conducted it through the various operations from the plow to the merchant.

Fen land is a soil quite different from the high lands of Essex or Kent, and what we call the high countries ; and our method of culture is as foreign from theirs, as our general system of agriculture in this nation may be from that used in the East or West Indies. We make use of no muck or compost, but have recourse to a method peculiar to the fens.

As the fens are subject to be very wet in the winter season, notwithstanding the many endeavours that have been made, and have not (except in some particular places) been attended with the success as could be wished for, though great improvements have been made ; I would, however,

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* We require no apologies for the style of our correspondents letters : we are greatly indebted to this gentleman for his favour, and should be glad to receive every month many such, as it abounds with good sense and solid experience. "One fact," an eminent council used to say, "is worth an hundred arguments." R.

be understood to speak of fen lands that can be kept dry in such order as a winter crop may with tolerable safety be set thereon.

About the middle of May we plow the land for burning, which is sward-land that has not been plowed for four or five years, or perhaps a longer time: our plows are what are called Dutch plows, with a large share; the edge and point is very thin and sharp, and is kept so by filing: the furrows should not be more than about seven or eight inches wide, and an inch and a half thick, and as few baulks or missings as possible: when it has lain so long that the sods or furrows are dry, (in which the farmer's own discretion must guide, it being impossible to point out that in this place) it must be made into heaps about the size of middling grass-cocks, each person carrying on with him, as he heaps, about seven furrows: the work will then direct him how big the heaps will be; the heaps should be made as narrow at top as you conveniently can, by way of prevention against wet weather. If every person keeps his work as to the number of furrows, the heaps will rise in regular rows; but one thing should be observed in the heaping: the usual method of the workmen is, to set the rows in the following manner: for information sake we will suppose three rows made in the common method, which will stand as in the margin, one heap against another, in regular lines each way; but this method is entirely wrong; for when you come to spread the ashes, they do not cover the ground so regularly as if the heaps stood in quincunx order, as in the second figure in the margin, the heaps of the second row being placed against the intervals of the first, &c.

When it is fit for heaping, the customary way of this country is to put the burning out to people, to burn and spread the ashes, which must be spread so as to meer and cover the ground all over: the usual price is from three shillings to five shillings *per acre*; but that in a great measure depends upon the dryness or wetness of the season: but I think it

it most adviseable, where people are plentiful, to do this work by the day; then you put on as many people as you think fit; for it should be burnt off with all possible expedition; for if it be long in burning, it is attended with bad consequence, which in bad rainy weather is hard to prevent: it is therefore very requisite to follow it up, otherwise the grass-roots, that lie below the reach of the plow, when plowed for burning, will shoot out, and in a little time become almost as full of grass as though it had not been plowed at all: then, when you plow it after the burning, instead of breaking, so as the seed may fall into the cracks, it will turn up as straight as clay, and then no seed can grow any where but in the seams between each furrow.

When one side of the field is cleared, with ashes spread, you must, as soon as there be room, get to plowing, and sowing the seed: you must still observe to have your furrows no wider than already mentioned, and about two inches deep; for as fen land, in general, plows tough, more than breaks, you will have more seams than if the furrows are made wide: the custom with us is, to sow at night the land plowed in the day; for we account it the best way to sow the seed as soon as possible after the land is plowed.

The quantity we sow on an acre is about half a peck, or rather less: it would be proper to draw a light hurdle, stuck with thorn sprays, over it, by way of prevention against the fowls. We plow the lands about ten paces wide, that the furrows may carry the water off, where the land lies on a little descent.

There is one thing to be observed in the plowing, if the square of the piece will admit of it: you should plow for burning from east to west; and when you plow for sowing, then plow north and south, for these reasons: first, the land will break better for being cross-plowed; and then the land, when sown, will lie as it were full face to the sun; but this cannot always be done.

We have now plowed, burnt, and plowed the second time, and sown the seed: your Essex correspondent recommends hoeing*; but that is a practice I am entire stranger

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* See page 238.

ger to ; nor can it be done in the fens, the land being too tough for such an operation.

As soon as the coleseed begins to sprout, it is often all destroyed with what we call a black fly ; an insect so small, and being black, the same colour of the land, that it is almost impossible to see it, otherwise than as you walk among the seed, if you look steadily, you will perceive something hop or fly off, like the hopping of a flea : I have very often endeavoured to discover what sort of fly this is, but never could find one, though they will find the seed immediately on its first sprouting.

It has many more enemies as it advances in its growth : the next is what we call the black canker ; it is a small black worm, about a quarter of an inch long, or rather more : this takes possession when it is about the size of a small cabbage-plant, but windy and rainy weather are great helps to the destroying that insect.

There is yet another enemy, but he appears in a different dress : this is the green caterpillar, more than an inch long, but don't come till about the latter end of September, and very often destroys a great deal of it ; but the frosty mornings generally dispatch him.

I have now gone through the various steps of the culture of coleseed to this particular period, with a supposition that we have escaped all those dangers. I will now give you a short sketch how we proceed when we are attacked with those enemies above mentioned.

If the small black fly eat the first sprout, it is usual to sow the land again ; but I would advise the farmer, before he sows, to harrow the land with a light harrow with wooden teeth, for if the harrow be heavy it will tear up the furrows : my design in this is, to raise a fesh mould *, by which means the seed will strike much sooner than if nothing was done to it.

As to the black canker, the only method I can advise is, to let two men take a waggon-rope, each take one end, and

* This is a very sensible caution, and much to be recommended on such occasions. R.

and draw it over the plant about twice in a place, by which means the canker will be beaten off the plant on to the ground, which seldom rises again.

As to the green caterpillar, the same expedient, I believe, would be of service to that; but, as I have said before, we are chiefly relieved from it by frosty mornings.

I should now proceed to acquaint you what use we put the coleseed to when it is arrived to this state of growth; as also what subsequent crops we sow after the seed is eaten off; and also why we chuse to burn the land rather than muck it; and also to give you some account of coleseed sown in September; and for what reason and purposes they are sown at such different times; and also the method we proceed in, in the reaping and threshing; and what we esteem a tolerable common yield *per acre*: but an information of this sort would take up too much room in your *Museum*, &c. that may be filled with much better articles*.

I am, GENTLEMEN,

Your humble servant,

Middle Level,
Jan. 28, 1764.

J. J.

NUMBER XCVIII.

A Letter to the Editors, from a Member of the Society of Arts, containing Hints and Desiderata in the Art of Dying.

GENTLEMEN,

I Have read the several Numbers of the *Museum Rusticum* which have made their appearance, and approve much of their contents; but am greatly surpris'd so little has been written by your correspondents on the subject of dying.

This may be esteemed, especially in England, a very considerable branch of commerce, as most of our woollen goods

* We must beg the favour of our correspondent to complete his account of the coleseed, as raised in the Levels, which will lay us under a great obligation. O.

goods are indebted to it for the preparation they receive before they are in a condition elegant enough to be exported.

Surely it must be allowed that this art of dying is capable of great improvements; and can there be a more certain method of bringing it to perfection than a communication of knowledge?

Almost every dyer has his little secret, which, for want of being communicated to somebody capable of improving on the hint, remains useless on his hands; and he had rather it should do so, than that any other should benefit by his thought.

But is not this a narrow way of thinking; and would not the man, who had the least public spirit, be content to share with others the benefit of that hint which he was not himself capable of improving?

The misfortune is, that many men who follow this business are mere machines: they have been taught, during their apprenticeships, that such and such ingredients, combined and managed in particular modes, will have such various effects: they take all upon credit, they know nothing of the doctrine of causes, and are quite ignorant of what is meant by the theory of an art.

It is not from such men we are to expect improvements in the art of dying; they are content to jog on in the old *routine*; and if they lose not any part of their knowledge, thus by rote acquired, they think they have acted well their part in life.

Others indeed are more ingenious; they make use of their reason, and are curious to search into the latent causes of the effects they every day see produced: they may perhaps in part discover these causes, and, by various experiments of different combinations of substances, may, by chance, produce an effect which to them appears new: their next thought is, to turn this as much as possible to their own particular advantage, and it is seldom they get much by it; whereas, were they to communicate generously to the public this their boasted secret, it might either turn out no new discovery, or, if new, might be capable of great

great improvement, which the experiments that would soon in course be made would soon effect. All the honour of the discovery would rest with the person who had first given the hint, and he would have his share in the profit resulting from the practice of his method. But I should do great injustice to the dyers, did I not confess that there are among them men remarkably intelligent, who have studied nature, are masters of the principles of their art, and know how to improve on accidental circumstances.

To these is the nation much indebted for many important discoveries, which I am willing to think they would communicate for the benefit of their country, did they know of any proper method of doing it. Doubtless, as you, Gentlemen, have afforded them a fair opportunity of proving their public spirit, they will not miss the occasion; but I shall hope soon to see some valuable pieces in your collection on this subject.

As I have gone so far, I shall next proceed to hint to you a few *desiderata* in this art.

Allum is by the dyers ranked among the *non-colouring drugs*. This last is well known to be greatly used by the dyers; it is a common ingredient in many of their compositions; but in what manner it acts on the matter to be dyed, is not yet well accounted for.

Some reasonings, from facts I mean, on this subject, would be of great utility; and who so capable of reasoning on it, as the last class of dyers I mentioned, who, being in continual practice, have constant opportunities of observation, which we will suppose few of them suffer to escape unapplied.

I should also be glad to see some good theories for dying a fine black: experiments might easily be made on them, and the processes, if good, soon brought into use: our present practice is doubtless bad, when compared to that of the French, as their blacks beyond comparison excel ours; to instance it only in their hats, which never grow rusty to the last, being thoroughly tinged with a good colour.

The French crimsons also excel ours; they are more permanent, and less apt to fade. I have not the least doubt, but that by a mutual communication of knowledge we should soon attain methods of dying these two colours to as great perfection at least as the French; and surely it is worth attempting.

I am apt to think that the true method of using madder for dying scarlets is not yet discovered: the *bastard scarlets* are, it is true, dyed with it; but it is highly probable that this useful root might, if properly prepared, or mixed with proper ingredients, be used as a substitute for that very expensive drug cochineal.

To procure a fine bright colour, it is not unusual to over-dye the stuff, and afterwards discharge a part of the colour by *back-boiling* with a mixture of some *non-colouring* ingredient.

I shall not, I dare say, be thought to advance too much in asserting that this art of back-boiling is not sufficiently understood. Great mistakes are made in its application; it is often omitted when the practice would be very salutary, and applied when it would better be let alone. In this case therefore, I think, improvement is wanting.

We know that copperas is used for dying blacks; but what mediate effect it has on the stuff, any more than what the sense of sight tells us, we know not; its ultimate effect we see by the stuffs assuming a black dye: how it operates, verified by experiment, would be a useful acquisition; as such I recommend it to the consideration of your ingenious readers.

One more thing I must beg leave to mention before I conclude, which is, that the qualities of the several kinds of water, when used in dying, are not yet sufficiently ascertained. The dyers will tell you that one water excels another in particular uses; but ask them the reason, and they are quite a-ground.

Some have ascribed the beauty of the French blacks to the quality of the water they use; but if it was owing to this alone, it would surely be no very difficult matter to
enquire

enquire into the nature of this water ; and probably much of the same quality might be found in our island.

This water, or *white liquor*, as the dyers call it, is indeed a very necessary article, serving as a common or general menstruum for their colours. The proper use of the white liquor in dyes might be doubtless reduced to a regular system, and the colours to which the several kinds are best adapted might easily, by proper experiments, be ascertained : much of the elegance of the art depends on a propriety in this matter ; but how much we know not.

I have taken up a great deal of your time ; and after all you may perhaps say, that I rather propose than solve difficulties : it is true, I do so ; I mean this letter as a hint to the ingenious to communicate their hitherto self-reserved knowledge, and am not without hope, that I shall soon see some difficulties, which occur in the noble art of dying, removed by means of some of your correspondents letters ; and in this hope I beg leave to subscribe myself,

GENTLEMEN, Your most obedient servant,

A MEMBER of the SOCIETY of ARTS, &c.

And a LOVER of USEFUL IMPROVEMENT.

NUMBER XCIX.

The Reverend Mr. Stephen White's Letter to the Editors of the Museum Rusticum, concerning Collateral Bee-Boxes.

GENTLEMEN,

ONE of the leading questions in your first *Museum*, is, *Whether the number of bee-hives might not be to advantage increased in many places ?*

The management of these useful and delightful insects has long been the principal amusement of my leisure hours. I have already given the public, and particularly the worthy *Society for the encouragement of arts, &c.* the result of my observations and experiments, in a

pamphlet entitled *Collateral Bee-Boxes* *; the third edition of which, with improvements, is just published.

As to the encrease of bees, it is much to be wished, but cannot be expected, so long as the present custom prevails, of burning well nigh *half the bees* in the kingdom every autumn. To kill and destroy, is not the way to encrease your stock, notwithstanding the old bee-mistress's favourite maxim, *Burn bees and have bees*: which is no bad proverb when rightly understood; and the plain meaning of it is, that it is better to burn bees outright, than to drive them into an empty hive, where they must perish with hunger. But if you can take away such part of their store, as they can well spare, and preserve their lives, to work for you another, and many other years, this must of course, by their swarming, encrease your stock: the encrease of your stock will add greatly to your profit; and you will, by the same means, be relieved from the painful task of burning your little innocent labourers, which no true lover of bees can perform without much concern and reluctance.

An effectual method of doing this has been in vain attempted by most of the authors who have wrote on this subject. With a view to this discovery, I have tried, during the space of near forty years, more, I believe, than forty different forms of boxes; and have now the satisfaction to think myself amply rewarded for all my pains and expences, in having, at last, hit upon a method of taking part of the honey, *without destroying*, or much *disturbing*, the bees; which appears so easy, plain, and natural, that I cannot help being surpris'd that it was not the first which occurred to my thoughts.

There is one popular objection, not against my boxes in particular, but against all hives made of wood, *viz.* that they are colder than straw-hives, and therefore the bees will not prosper so well in them: I have, I think, fully

* We acknowledge ourselves greatly indebted to Mr. White for this token of his approbation: a continuance of so valuable a correspondence will oblige us much. N.

fully answered this objection in my pamphlet *, to which I beg leave to refer, and shall only observe here, that in the cold country of Russia, from whence great quantities of honey are imported into these kingdoms, their hives are (all of them, I believe) made of hollow trees.

I am, GENTLEMEN,

Stratford, Suffolk,

Your most humble servant,

Feb. 10, 1764.

STEPHEN WHITE.

P. S. A pair of boxes, with a pane of glass in each, and painted, will cost about four shillings and six-pence ; which, allowing for the duration of them, will be as cheap as straw hives.

NUMBER C.

A Letter to the Editors, on the Damage of too much Rain, Wet, &c. to Farmers; containing two Remedies for curing the Rot in Sheep.

GENTLEMEN,

AS we have had, this last autumn, and present winter, more rain in proportion for the time, than has fallen for many years past, I hope you will not think the following reflections, chiefly collected from a long experience, unseasonable.

We hear daily of many counties being in a manner overflowed by the land-floods ; thousands of sheep have been drowned, and it is to be feared many more will die of the rot, occasioned by too much moisture, or perish for want of fodder.

The wheat in many places will be washed out of the ground,

* The ingenious pamphlet above referred to is entitled as follows, *Collateral Bee-Boxes ; or, A new, easy, and advantageous Method of managing Bees.* In which, part of the honey is taken away in an easy and pleasant manner, without destroying, or much disturbing, the bees ; early swarms, if desired, are encouraged, and late ones prevented. With a copper-plate frontispiece, representing these bee-boxes. Price 1s. A.

ground, and the flat lands will be so wet, that the spring-corn season will of course be backward.

We receive these things at the hand of God, and should not murmur; yet human prudence may often apply a palliative at least, if not a remedy.

The damages done to our crops by land-floods is chiefly owing to the want of proper drains to carry off the water, when it comes suddenly down upon us, and to the slovenly custom many farmers have of not scouring their ditches for years together: a ditch properly disposed serves as a drain to a field; but then there should always be a fall for the water, and a channel to give it passage into the lower grounds.

Most wonderful things have been done in the draining way. It was at one time thought impracticable to drain the extensive level between Yorkshire and Lincolnshire, as the great river *Idle*, navigable of itself, passed, with its destructive land-floods, through the vast level on the Yorkshire side of the Isle of *Axholm*; yet was this river, by the skill of the undertakers, carried through a new cut into the *Trent*, on the other side of the isle: by this happy thought the draining was greatly facilitated, and a large tract of land recovered from the waters.

When land is hurt by floods, the first thing necessary, is to see where the water enters, and whether its course may not be diverted into another channel, so as to carry it either round or through the land without much damage.

Where this can be done, if the land is not in its own nature wet, much loss may be prevented; but if the floods come down so sudden and violent, that there is no stopping them, the next remedy is, to give them as easy a passage as possible: for this purpose, we must find the lowest part of the land, and bring the fall of the water all that way, if practicable, opening channels to carry it off.

These main channels, or drains, should always be made large enough to carry off the body of water; and in fact there is very little land so absolutely flat and level, as to have

have no fall : the great art is to discover it, and make a proper use of it.

If, in any particular case, we find it out of our power to make a passage deep enough to carry off the water from the bottom of the drain, either by reason of our being prevented from cutting through another person's land, or that the passage is long, or in the neighbourhood of some river, which may be apt to revert upon the works ; it is then best to erect an engine, which will be found of great use, and do that which could by no other method be done. If the water is not to be raised to any great height, the engine need not be large, and of course will not be expensive.

Some have an objection to engines, if the use of them can be avoided, as there may not always be wind to move them ; but this is little to be feared ; there will always be wind sufficient, at one time or other, to keep the drains empty ; for during the greatest calms are always the greatest droughts, and in the wettest seasons winds are seldom wanting, especially on flats or levels.—So much for draining.

I shall next take notice of some of the effects of too much wet. In the first place, over-much moisture generally proves very injurious to corn : the usual remedy, especially in cold clays, and stiff loams, is to lay the land in high ridges, and cut drains at the ends of the furrows, to carry off the superfluous water : this method I approve of, and have often to advantage practised.

It has been remarked by many, as well as myself, that after a wet summer, corn is apt to be blighted. This is, I think, easily accounted for : the reason is, that the superabundant moisture, which lies at the roots of the corn, makes it run much to straw, and little to corn ; and at the time the corn should kerne, the moist vapours exhaled from the wet grounds by the sun do, in the nature of a mildew, prevent the due growth of the grain in the ear.

It is necessary to take notice of one very remarkable circumstance, which has been very often observed, and is laid down

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as a maxim by husbandmen ; which is, that when these mildews arise, or blights fall, they infect one sort of grain generally, as sometimes only wheat ; at other times oats, &c. The same thing happens in fruits : sometimes apples are generally blasted ; at other times only pears ; and often only cherries, walnuts, filberts, plums, &c. like the murrain in cattle, infecting one species. This is a thing I have never been able properly to account for, and should therefore be glad of the sentiments of some of your more able correspondents on the subject.

The greatest enemy the husbandman usually finds in time of harvest is rain, against which the best remedy is expedition : he should remember the old proverb, and *make hay whilst the sun shines*.

I have often been surpris'd, that in large farms, where they have a considerable distance to carry their corn when it is cut, they do not erect here and there, in their fields, temporary shelters, in which the wheat at least might be preserved from damage by rain, till opportunity served to cart it home. This would be almost every year of great service, but more particularly so in dripping harvests. I could wish my brother farmers in Ireland, where they have more rain in proportion than we have, would take the hint. The expence of erecting such a shelter, capable of containing a large quantity of corn, would be trifling, when compared to the many advantages that would result from the practice of this method. These shelters would be far from useless the remainder of the year : they might be so contrived as to screen the cattle, during the winter season, from the severity of the weather ; they might be made to serve as covered folds for sheep, than which nothing can be more useful ; besides many other purposes, too tedious now to mention.

In different counties the farmers have different methods. In *Somersetshire*, in order to preserve their wheat from damage by rain in harvest, they lay their sheaves in very large shocks, or heaps in the field ; and they contrive to

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cap them in such a manner, that they will not in a long time take damage.

This is certainly a good practice, and worthy of imitation: yet in *Wiltshire*, and some more southerly counties, they leave most of their corn without care to the chance of good or bad weather, though the fields are often at a great distance from the barns; and this negligent practice is sometimes of course to their very great detriment.

In the west of *England*, in the champaign countries, where the lands sometimes lie two or three miles from the barns, the *reek stavol* * is of great use; the corn is much sooner laid secure, and long draughts are saved, which is a matter of great importance at so busy a time.

It is too much the custom, in some very extensive farms, to have only one immense barn near the homestead: this is very inconvenient, and it would be much better to have several barns dispersed at convenient distances in the land. The corn would thereby be sooner housed, and better preserved, as well as easier threshed; the foddering the cattle with straw would be more convenient, and the muck or dung would be more dispersed, and much cheaper carted for the improvement of the land. In the common way we often see the fields round the farmer's house rich and well improved by manure; whereas, those at a distance are frequently in a wretched starving condition, by being constantly cropped and never mended: did the landlord therefore know his own interest, he would certainly disperse his barns over the whole space of his land.

I know it will be objected, that barns at a distance from a farm-house will be more open to the attacks of night plunderers; but this leads me to make another observation, which is, that the labourers employed in a farm ought to live in cottages on the land; and where can these cottages so well be disposed as to have one of them near each barn? In this manner would the farmer's property be well guarded,

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and

* This is a term used in the west, and signifies a frame of wood placed on stones, on which the mow is raised; this is sometimes also called a *reek staffold*.

and his labourers would be nearer at hand to do his business; whereas now they are often obliged to go two or three miles to work, which cannot be for the advantage either of the labourer or master.

I am now come to the more important part of this letter, meaning to detain your readers some time longer, till I have said a word or two on the subject of the rot in sheep, which is almost always principally occasioned by too much moisture.

But the rot in sheep does not always proceed either from moisture alone, or the nature of the soil alone; for all moist grounds do not cause the rot in sheep, and there are some lands which rot sheep in wet years only.

The rot, in fact, arises from a certain putrefaction, both in the air, and in the grass or herbs that usually grow in such moist years: these, together with their moist food, corrupt their livers, and bring on the disease.

It is indeed very difficult to cure this disorder, unless it is attempted before the liver is too much wasted: where there is a convenience of doing it, the best remedy is, an immediate removal to *salt-marshes*; but this is far from being in every farmer's power: I shall endeavour therefore, from my own former experience, to supply the deficiency.

In such cases as these, a prevention of the evil is to be recommended to the practice of every rational farmer.

Some grounds naturally yield a soft, spongy grass, which is, more than any other, subject to breed the rot in sheep; I would therefore advise, that other cattle be fed in these grounds, and the sheep kept in the driest, hardest, and healthiest pastures.

I have known land that has kept sheep in health for many successive years, yet afterwards, when the months of May and June have proved wet, a frimm and frothy grass has suddenly sprung up, which, together with the bad air that must of course follow, has caused a rot in the sheep that were then on it: the evil was observed in time, the sheep were removed to a dry and almost barren heath, and in the succeeding winter they were foddered with good, dry,

dry, sweet hay, and a great loss was prevented : this happened to an old friend of mine, since dead.

This unwholesome grass is most apt to grow in cold land, and in the summer time ; and it is a general opinion, and well founded on experience, that if the summer does not rot sheep, the winter will not, the power of the winter alone not being strong enough to begin a rot.

A very sensible writer, whose book I have just turned to, I mean Mr. Lisle, says, that broom is very good for the rot ; and indeed I have often experienced it ; for in a farm I occupied some years ago there were several broom-fields, and I have often observed that such of my sheep as were part of the year fed in them were never infected with the rot, whilst others in my possession had it to a great degree. I profited however by experience, for I took care thenceforward that all my sheep should, by turns, enjoy the advantages to be derived from their feeding on the young shoots of the broom.

As to what Mr. Lisle says, on the authority of Mr. Ray, that the marsh trefoil will cure the rot, I cannot, from experience, corroborate it : I have heard its efficacy in this disorder often mentioned, but never yet heard any particular fact related so circumstantially as to induce me to depend on its effects.

That salt is good, I agree with the above gentleman and Mr. Boyle ; and this gives me an opportunity of communicating a receipt which I know to be a good one.

“ When you perceive, by the colour of your sheep’s
 “ eyes, that the rot has taken them, drive your flock into
 “ a barn, a covered fold, or some such convenient place :
 “ around this place let there be wooden troughs, like man-
 “ gers, in which you should feed your sheep with good,
 “ dry, clean oats, for forty-eight hours : then have ready
 “ some bay salt finely powdered and searced, of which you
 “ are to sprinkle a little among the oats, encreasing the
 “ quantity till it disgusts the sheep, and you perceive they
 “ fall off their appetites : afterwards, for the two following
 “ days, give them again clean oats ; and then mix your salt

“ with them as before, continuing this process till their
 “ eyes have recovered their natural colour, when you will
 “ find them perfectly cured; and to be convinced, it will
 “ only be necessary to kill one or two out of the flock*.”

To this I shall add a receipt for the rot in sheep, which was communicated to me by a friend, a man of credit and veracity, who says he has often tried it with success.

“ Steep some regulus of antimony in ale, adding thereto
 “ some grains of paradise, and a little sugar to sweeten it.
 “ Of this infusion somewhat less than a gill is to be given
 “ to everyone of your affected sheep: they are to have two
 “ or three doses, according as they are more or less affected
 “ by the distemper, allowing two days intermission between
 “ each dose.” This is said, as I have already observed, to be a cure almost certain.

I just now took notice, that when rain falls in the months of May and June, it is apt to cause the rot in sheep: it will be necessary to add, that folding them in the above months encreases the disorder; for after having been deprived of their liberty during the whole night, they bite the noxious grass the more greedily in the morning, having less ceremony in their choice of herbs than if they were not folded. This is a matter of some consequence, therefore worthy of being attended to.

One thing more I must, on the authority of Mr. Lisle, communicate to your readers, viz. an observation of a *Leicestershire* farmer; that sheep, when first touched with the rot, will thrive mightily in fatting for ten weeks; but if they are not disposed of when they are come up to a pitch, they will, in seven or eight days time, fall away to nothing but skin and bone. The same farmer observed, that he had often had them die in the height of their pitch, in half an hour's time, with twenty-seven pounds of tallow in their bellies.

I wish the hints contained in this letter may be of any service to the public; and it would give me a great deal of pleasure

* For a remedy against the rot in sheep, nearly on the same principles with the above-mentioned, see the piece marked No. XLVII. page 212.

pleasure to see some of these subjects enlarged on by any of your more knowing correspondents. I am,

London,
Feb. 4, 1764.

Your humble servant,

A QUONDAM FARMER.

NUMBER CI.

A Letter to the Editors, containing Observations on Mowing of Wheat.

GENTLEMEN,

PERSUADED, from the nature of your design, that you wish not to have any assertion of your correspondents, or even yourselves, taken for unquestionably true on the bare authority of the asserter, I sit down to give you some observations on mowing of wheat; though I shall be obliged to call in question some things of which you seem fully convinced.

Your correspondent S. K. in No. IV. of your work, and page 19, having observed the custom of the Essex farmers to mow wheat-stubble for malt-kilns, adds, "They think, not without reason, that this does rather good than hurt to the land; for the dry stubble, not being apt to ferment, is a great while before it rots in the land; it keeps the land hollow, grows mouldy, and, some think, often occasions the following crop to be smutty."

This doctrine, Gentlemen, (at least so far as it regards the keeping of land hollow) one of you, signing N. has adopted, in the first note at the bottom of the page; and goes to such a length as to ascribe *positively* the badness of crops to this *slovenly husbandry*.

Now, as this *slovenly husbandry* (as you are pleased to call it) is *invariably* the practice of all husbandmen in this, and many other considerable corn countries, I will do you the honour, first to answer your charge, and then apply to your nameless correspondent.

I was

I was taught, above twenty years ago, in *Cambridge*, that whatever proves *too much*, proves *nothing*; and have found, ever since, this rule of logic most useful in detecting fallacies in writers of my own profession, and all others. It will be very easy to apply this test to your assertion.

Were this *supposed slovenly husbandry* sufficient to account for bad crops in the country where it is used, it would follow that *all* crops where it is used would be bad; whereas, on the contrary, our crops in this, and other countries where it is used, are well known to be as generally good as in any country where it is not used, and, perhaps, even better, when proper choice of land and methods of culture are observed. Badness of crops then must be ascribed to a neglect of some of these circumstances, and not to leaving stubble unmowed. Indeed it is so uncommon to see the wheat plants in spring *thin*, if the common quantity of seed has been allowed, with common culture, that I don't know that I *ever once* heard the complaint, which in your note is represented as the *common* one *.

Let

* If our correspondent is the least attentive to the spirit of the first note under page 18, he will be convinced, that where it is said that the stiff stubble keeps the land hollow, it was certainly light land, in which the pores are already too large, that was meant; for on stiff land, such as is best adapted to wheat, it is acknowledged plowing in stubble may be of service, by raising a fermentation, and promoting a separation of the particles. He will also perceive that, in the same note, the stubble to be plowed in and sown with wheat could not be a wheat stubble, as wheat never succeeds wheat in the same land: what was here meant, was a stiff oat stubble. In many counties it is customary, when land is first broke up, to sow it with oats, to abate the rankness of the soil, and afterwards to sow wheat; for was wheat to be first sown, it would run all to straw: in this case the oat-stubble must be supposed very stiff, and capable of damaging light land by being plowed in. As to what is said in the note, relative to wheat plants being in the spring thin and scattered, it is not mentioned as a *common* case, as our correspondent seems to imagine: that it has happened on light land, where an oat-stubble has been plowed in, the editors could give several instances. It was thought necessary to say so much, in
expla-

Let us now inquire into the reason of your nameless correspondent, S. K. "Dry stubble, not being *apt* to ferment, " is a great while before it rots in the land." I must own, Gentlemen, it appears to me that, in fact, every single circumstance, here ~~mentioned~~, tends to prove the direct contrary of what your correspondent would prove. I will allow, that *dry stubble* may not be *apt to ferment*; but then I add, that the *stubble* in question is *not dry*: it stands to receive all the rains from the time of *reaping* till the time of *sowing* in spring; and what a quantity of rain *such* hollow tubes as stubble must receive, I need not say: let us add the effects which *frosts* and *thaws*, during the season, will have. No one can doubt what alteration, in tendency to rotting, will be made in the stubble by these and other concurring causes.

When the plowing carries this stubble into the land, it is obvious that it must lighten it extremely; and as soils fit for wheat are generally too compact, this circumstance must be very advantageous to the following crop; especially as clayey soils, which are fittest for wheat, easily bark on the surface, and let the rains in summer fall from the ridges to the furrow; when the shrinking stubble will supply channels to distribute and preserve the moisture obtained before this drying season.

As to *mouldiness*, it is surprising that your correspondent should ascribe it to *dry stubble*, when it is well known to proceed from *moisture*, and want of free passage of fresh air; circumstances which must attend lands unplowed in winter, whether the stubble be *shorn* or *mown*, and is chiefly to be ascribed to the rotting of the roots of the stubble, which are the same in both cases. As to your correspondent's last suggestion, that *smuttiness* may be the consequence of leaving stubble long, it scarce deserves any answer: it proves evidently *too much*, viz. that *all* grounds, whose wheat is not mown, would have the succeeding crops smutty; the
contrary

explanation of the above note, in which the editors acknowledge the sense is not so fully expressed as it might have been. We are greatly obliged to Mr. Comber for his remarks, and shall be glad of a continuance of his correspondence. N.

contrary of which is most notorious. Indeed your correspondent is so modest as only to say, "*some think* *."

And here, Gentlemen, I must wonder that, as one of you so readily fell in with this correspondent's doctrine, about the *supposed* disadvantage of leaving *long unmown* stubble, so none of you bestowed a note on the doctrine of another correspondent, who, in No. XLI. page 190, says, that when he has *cut his beans*, he *immediately* plows in the stubble, and *instantly sows wheat* †. If any inconvenience could arise from plowing in the wheat-stubble in spring, how much more from an *immediate* plowing in such a strong stubble as that of beans?

While I was writing this letter I was visited by a gentleman-farmer, who is a man of *experience* and *understanding*, and lives much nearer the Wolds (where the wheat is all mown) than this place, and has a fair opportunity of judging of the conveniencies of both methods: he, though a *modest* man, is *most clearly of opinion*, that the leaving of stubble long, as in shearing ‡, is so far from being a disadvantage

* Though smuttiness is known chiefly to befall the *wheat* and *rye* crops, (and more especially the former) yet, as it happens in a degree to the crops of *barley* and *oats*, I chose rather to suppose him to mean these by *the following crop*, than *another wheat crop* at the full distance of three years. COMB.

† This quotation is not quite fair. Our correspondent above referred to says, "As soon as my bean crop is cut and tied up, I carry them on to some up-land dry pastures, where they are set up to dry, and I immediately plow up the field where the beans grew, and give it at least another plowing before I put my wheat into the ground." It is evident then, the wheat was not *instantly* sown. The reason the editors did not bestow a note on this passage is pretty evident: they naturally imagined that their correspondent caused the bean-stubble to be pulled up before he plowed the land, though he does not mention his doing it; and they were particularly led to this opinion, by his having before told them, that his soil was a light gravelly loam, on which so strong a stubble could not but do damage. N.

‡ In the north of England they call reaping wheat shearing it: we should be greatly obliged to Mr. Comber, if he would inform us what is the particular method of mowing wheat in the *Wolds*, and whether it differs from the common way of mowing barley and oats. E.

vantage to the land, that it is a considerable advantage ; the long stubble, when mellowed by the winter, being equal to *half* a manuring ; especially when the warmth which the ground receives from this, as from all covers in winter, is considered.

Where proper fuel for malt-kilns is wanting, the usefulness of stubble for this purpose may be a motive for mowing of stubble : though one would think that *straw* should better answer this purpose, and the expence of shearing, and then mowing of the stubble would be saved *.

Wheat-straw is indeed *very useful*, as it makes no despicable thatch, especially where plenty of rye-straw is not to be had ; and they must have an abundance of fodder, who do not use wheat-straw for this purpose ; for, although it is rather too dry even for oxen and young cattle, and binds them too much when used alone, it is good for almost any goods, (except milch cows) when mixed with coarse hay, or *barley* and *oat straw*, especially the last, the plenteous juices of which correct the dryness of the other.

In proportion then as wheat-straw is useful, the argument for mowing of wheat is advanced ; but then it must be remembered, that more manure is absolutely necessary for land, the wheat of which has been mown : and since the expence of loading and spreading of manure is known, from a consideration of all these several other circumstances must we estimate the utility of mowing of wheat.

I must defer my other observations on this subject to another opportunity †, and am, in the mean time,

GENTLEMEN,

A sincere friend to your undertaking,

THOMAS COMBER, *Junior*.

East-Newton, near Malton, Yorkshire,

Jan. 19, 1764.

P. S.

* Many farmers in Essex are so sensible of the advantages of clearing their lands of stubble, that they permit the labourers to mow it for their own benefit, and sell it at a stated price *per* load to the maltsters ; but we would not wish to be understood that this is done on heavy lands. N.

† The sooner this gentleman sends us the observations he mentions, the more he will oblige us ; and we take this op-

P. S. I set my name to this letter, as I perceive you seem to approve that practice of your correspondents, and, I think, rightly.

N U M B E R C I I.

A Letter to the Editors, recommending the Culture of the Tea Plant, now growing in Carolina.

GENTLEMEN,

MANY have doubted whether the trade carried on by the incorporated East-India company is advantageous, or disadvantageous to this country; but be that as it may, the great consumption of *tea* is often urged as an argument for its continuance.

The balance of trade to that part of the world is certainly much against us, witness the immense quantities of bullion that are annually exported in their outward-bound ships; and it is as certain, that a very considerable share of this bullion is exchanged for the purchase of the different kinds of *tea*.

As this is the case, would it not be allowed some degree of merit, should I point out to you in what manner we might easily be supplied with this article of family consumption from our own American colonies; our southern colonies, I mean, such as the Floridas, Georgia, and South Carolina?

It is very well known, that in the trade carried on betwixt our North-American provinces, and the mother country, the balance is greatly in favour of the latter; that is, the value of the imports into North-America from England greatly exceeds that of the exports to it; of course, whatever article can be imagined, that will tend to bring the trade betwixt the two countries nearly upon a par, must be advantageous to both; and this I will venture to say may be

portunity of thanking him for subscribing his letter with his name, and with all our correspondents would do the like. R.

be effected by encouraging the growth of the *tea plants* in such of our colonies as are best adapted to the nature of those plants.

There is not the least doubt but that the tea plants might be to great advantage raised in those provinces.

A celebrated author says, that “the *tea tree* loves to grow in valleys at the foot of mountains, and thrives best in a stoney soil. Its seed is usually sown in places exposed to the south; and it bears flowers three years after it is sown. The root resembles that of the peach tree: the leaves are green, longish at the point, and pretty narrow, an inch and a half long, and jagged all round. The flower is much like that of the wild rose, but smaller. The fruit is of different forms, sometimes round, sometimes long, sometimes triangular; and of the ordinary size of a bean; containing two or three seeds of a mouse colour, including each a kernel. These are the seeds by which the plant is propagated.

“The trees are of various heights, from one foot to an hundred: some there are which two men cannot fathom, while others scarcely exceed the feeblest shrub in a garden.

“The *green tea*, which is the common tea of the Chinese, father le Compte calls *bing tea*, and says it is gathered from the plant in April. The *bohea tea*, which is the *voui tea*, or *bou tcha* of the Chinese, father le Compte makes only to differ from the *green tea*, by its being gathered a month before it, viz. in *March*, whilst in the bud. Others take it for the tea of some particular province; the soil being found to make an alteration in the properties of *tea*, as much as the season of gathering it.

“The best time to gather *leaves of tea* is while they are yet small, young and juicy: when gathered, they are passed over the smoke of boiling water to moisten them; then they are laid on copper plates, which are heated; and thus, the leaves drying, they curl up in the manner in which they are brought to us.”

Doct^r Lewis, under the article *Thea* in his *Materia Medica*, seems to differ in some points from the above-quoted ingenious author. He says, "The leaves, carefully picked, " are dried hastily on warm iron plates; whereby they " are said to lose in great measure some noxious qualities, " which they have when fresh, and to preserve their admir^ed flavour, which by slow exsiccation would be " lost."

For my part, I should rather be inclined to join with Doct^r Lewis, in opinion, as copper when heated to a certain degree emits disagreeable and noxious vapours, such as must, I should imagine, more or less, affect the leaves as they are drying on the plates.

But it may perhaps be urged, To what purpose all this detail about *tea*, and the advantages of cultivating it for European consumption in America, when we should find it so difficult a matter to get from the cunning Chinese the seeds of any of the plants?

Happily this want is already supplied; the plants are now actually growing in *South-Carolina*, and have been of late much propagated. If it should be asked how they came there; the fact is as follows.

Some years ago a *Dutchman*, who had lived many years in China, left that country, and retiring to *South-Carolina*, bought there a plantation on the banks of a pleasant river, with an intention of passing in that delightful country his remaining days, which, as he was old, could not be many.

This man had, by some means or other, learnt of the *Chinese* the art of drying the several kinds of tea: he had procured a quantity of the seeds, which he brought with him to America, where he planted them in his garden, intending to propagate them by degrees, so as to be able to supply at least that continent with *tea* for their consumption; but God disposes, though man may propose; for before the plants were come enough to maturity to yield leaves in any quantity fit for drying, the old *Dutchman* died, and the whole project dropped: yet, as it was something curious to have the *tea plants* growing in a province so far distant

from the country which naturally produces them, many gentlemen, his neighbours, procured seeds from the Dutchman's plants, and they have been propagated in the gardens in that province ever since, though some who possess them know not what they are.

It is evident then, as we are now actually in possession of this plant, so valuable on account of the great consumption of its leaves, that we ought to make the most of it. A very few well-judged experiments would soon give us the secret of drying the *tea*: the plant is easily propagated, comes soon to maturity, and plantations of it might soon be made that would annually produce a very large quantity of this now almost necessary commodity.

As I mean this letter only as a hint for some of your more able correspondents to take up and pursue, I shall not engage your readers time any longer, and prevent their reading articles in your collection, they may possibly think much more material than this. I am,

GENTLEMEN,

Your humble servant and admirer,

Jan. 21, 1764.

AMERICANUS.

NUMBER CIII.

A Letter to the Editors, on the Culture of the Vine.

GENTLEMEN,

IN the *Museum Rusticum* for the month of December there is a short letter, marked No. LXIX. page 305, recommending the planting of vines on castle walls, ruins, &c.

Your correspondent would have conferred a greater obligation on your readers, had he enlarged a little more on the subject, which is of some importance, it being very difficult to procure good grapes in England, at least, according to the common methods of culture.

The

The gentleman above mentioned observes, that a clergyman planted some vines on a church tower, which yield grapes of a superior flavour, owing to the dryness of the soil wherein the vine grew. I agree with him in his reason, experience having confirmed the truth of it to me, and many of my friends.

I many years ago planted some vines at the back of my house; the soil was naturally dry; but I was inclined to make an experiment. Accordingly I planted my vines in two several methods, one in each method alternately; half of them I set in the natural soil, according to the vulgar method of planting; but the other half were managed very differently.

I caused as many holes, about four feet square, and as many deep, to be dug, as I had vines to plant in this method. These holes were filled with a compost, consisting of one part of the natural earth, which is a dry loam; a second part lime-stone gravel, and the remaining third part lime and brick rubbish.

This was well mixed by being frequently turned; and when the holes above mentioned were filled, more of the compost was laid on, till a large hillock was raised in the spot where each vine was to be planted.

In these hillocks the vines were planted, and they succeeded well. They were not, it is true, so luxuriant as those planted in the natural earth; but they came a year sooner into full bearing, and the fruit they yielded was infinitely superior.

This consideration determined me to root up all those planted in the natural soil, which I accordingly did; and the vines planted in the compost have now covered my walls, and bear me good fruit.

The result of this experiment it induces me to agree with your above correspondent, that a dry soil is best for vines.

Before I conclude this letter I must mention one circumstance, which will corroborate what your correspondent has said relative to planting vines on church towers:

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it is this, and your doubting readers may easily satisfy themselves of the truth of it, being near a place of great public resort.

Not far from Freshford, a clothing town in Wiltshire, on the borders of Somersetshire, about four miles from the city of Bath, is a place, and a most delightful spot it is, called the Hermitage. It is built with great art in a rock, and very romantically ornamented. In the several parts of the rocks about the house are many crevices, in which vines have been long ago planted, and succeed to admiration, as every one who has tasted the grapes produced in this hermitage must acknowledge, their flavour being superior to any of the kind known in England.

This, I say, Gentlemen, seems to corroborate what your ingenious correspondent has said in his letter above referred to; and I should be glad if some others of your readers would communicate what comes within their knowledge in this way, as I have not the least doubt but that there are many parts of England where vines grow in this odd manner, and yield good fruit.

As to the matter of inverting the branches, I cannot say I ever saw any so trained; but it may be a very good way, and as it tends to divert the regular course of the sap, may be a means of increasing the quantity of the fruit. Naturalists tell us that plants will grow in a state absolutely inverted; and possibly they may: why then should we doubt vines thriving in the method of culture recommended by your correspondent? I have only leisure to add, that I approve of your collection, and am,

GENTLEMEN,

Your most obedient servant,

E. T.

Salisbury,

Jan. 20, 1764.

NUMBER CIV.

A Letter to the Editors, from Mr. Irwin, respecting some erroneous Practices in Ireland in the Management of Sheep.

Reficit Industria, et ditat.

GENTLEMEN,

THE great honour you do me, by giving a place in your most useful collection to the trifling amusements of a leisure hour, encourages me to communicate to you, according as recollection furnishes them, such matters, in the practical and theoretical parts of husbandry, as I have made my business.

Though the public societies in Ireland, where I am a landholder, do a great deal towards exciting a spirit of agriculture, yet there seems to be still much left undone.

This would not be the case, had the lesser farmers, who are always the most numerous, and supposed to have the most practical experience, been more inspired than they are with the laudable patriotic desire of communicating to the public the operations of their different methods of farming, (for most people vary in this respect more than any difference of soil requires) by which means a proper system of husbandry, for the different provinces of that kingdom, might, to its permanent emolument, be soon established.

The farms, or tracts of land, in the occupation of landholders, in most parts of that kingdom, are unproportionably large for the business of population and domestic prosperity, as greater benefits would result from a more equal distribution. Hence it follows, one man will hold from one to 8000 acres (bog and other unprofitable ground excluded) of fine champaign land; and a great part of it perhaps within one mearing, with few or no subdivisions, so that his stock may run in a manner promiscuously, as if in one of the boundless lawns of Louisiana.

I have

I have been amazed at this destructive neglect in others, and (since my coming into England) more so in myself.—The proper division of land is the *corner stone* of farming. Yet till within these last forty years, (and the number is still but inconsiderable) few have attended much to keep their cattle properly separated, except by men and dogs.

The immensely destructive inconveniencies arising from this neglect (so far as they come within my little experience) I shall mention to you, as proper occasional opportunity may offer. For the present it may be serviceable just to point out some necessary precautions with respect to sheep.

Of all the quadrupeds, the sheep perhaps is the animal best adapted by providence to pay the rent. It requires great attention to it; but at the same time, little bodily trouble. The chief care should consist in their cantonment for food, in which our Irish farmers are extremely negligent (I mean those of them that have abilities to be otherwise); for they station them promiscuously over the land, enclosing only the fattening grounds, which is done but badly, and other cattle suffered to mix with them; whereas sheep, in their rearing and fattening state, should be by no means suffered to perambulate a variety of pasture. For this reason—

Most closes, or enclosed fields, have some herbage, besides the common grass, predominant in them; and where sheep are suffered to run over too many of these at once, the different mixtures in such extensive pastures have, I am convinced, from repeated experimental observations, very unfavourable effects on this tender and delicate animal, both as to rearing and fattening, or as to bone and growth*.

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3 M

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* If, suppose upon an average, over 500 acres of ley surface there shall be found, on physical examination, grasses (or rather herbs) of different qualities, some hurtful, and predominating in different fields; it is evident, sheep, being let through such a large parcel of ground at once, (which is too much the custom in Ireland) will suffer infinitely from the insalubrious fermentation that such an unwholesome mixture will cause in them; the secretion sending the more subtle parts of these (in a manner)

It actually gives, or inclines them to a *scower* (and other disorders well known to the shepherds) oftentimes not less prejudicial than that which they never fail getting in low swampy grounds, which always proves mortal to sheep that are suffered to remain ever so short a time in such places; for though the noxious insane effects of such pasture may not immediately appear, or operate on them, it never fails bringing on the rot in the end, which manifests itself by the *scower*, and other unhealthful symptoms.

A gentleman in my neighbourhood, who occupies several thousand acres of deep, rich soil, suffered a considerable loss of sheep, particularly ewes, in the spring of 1759, (I think it was) and that season was far from being inclement, especially wet, which is the most unfavourable weather to that kind of stock.

I made close enquiry into the causes of this uncommon mortality, for such it appeared to me at that time.

The common reasons for this destructive pestilence were indeed given; but from some observations I made from appearances, I did not judge them satisfactory.

It seemed to me that a too extensive run of over fertile, luxuriant soil, little or no shelter, negligence in folding, and other care not difficult to be taken, but absolutely necessary to the well-being of this delicate animal, had brought on a deadly and general rot.

Many were with difficulty saved, only to languish away, in all probability, the succeeding winter; for though a sheep, the first time it is tainted with the rot, whether in winter or summer *, may, for that season, with great care
and

ner) poisonous herbs into the blood. The larger quantity of natural grasses may indeed lessen their destructive influence; but they can never totally suppress it. Hence I would advise our farmers to divide their sheep into smaller flocks, and to allow them a less scope of land to run on. IR.

* Sheep acquire the rot in summer mostly by being suffered to remain too long on bottom lands. It is evident then that wet is the chief destroyer of sheep: hence it is that houses for them prove excellent preservatives; and in over wet seasons,
such

and difficulty be preserved, it neverthele seldom happens that any amelioration of pasture will make it a long liver; for when it is once touched with this disorder, a cure may (as in many human chronical diseases) be patched up; but it will never get thoroughly clear of it. Hence the generality of our farmers, though they may think otherwise from their practice, appear to me to be in great error in this respect.

But their stock is commonly too large, and they are continually buying in, or selling out; so that by not keeping them for any length of time they have not proper opportunities to explore rightly the effects of the causes we are now investigating.

The largeness of their stock, I say, prevents them from looking minutely into these necessary matters, which is not in general the case in England. Besides, from the great numbers they oftentimes possess, they are so accustomed to losses in this way, and so little attendant to physical causes, that they are things of course with them; neglects I call

3 M 2

them,

such as the present (Feb. 1764) is, and has been for some months past, I would advise the shepherd not to let his sheep about the land till noon; and not then, unless there has been previously two or three hours of fair weather (if sun shine, so best) to dry the tops of the grass; and he may in this case continue them at pasture till night fall. But whenever (in the depth of winter especially) the days prove wet for any continuance, it will be found to turn to much more account to keep them housed a-days, (inconvenient as it may be to some of our more extensive stock-masters, or aukward *slabbering* sky-farmers) and give them a little hay, straw, or other fodder: very little in such emergencies will do, for it is well known that a sheep can live fifteen days without any sustenance. They have been often found deep buried under the snow for so long a time safe and well, and have been discovered only by the chimnies which their breath made through it. They are moreover much subject to fail in their feet, which is chiefly occasioned by being suffered to be too much a-foot over the land, while it is impregnated with wet. This prevents numbers of them from driving properly, either to market, or on removal from farm to farm, which is hurtful to the farmer, many of them falling lame on the road, being obliged to be sold at half price. IR.

them, that a little attention would easily remedy, were the flocks never so large : and in this respect indeed it must be admitted, custom erroneously commits too many to the care of one shepherd in a country not yet thoroughly improved.

Through the laziness or inattention of the herd (for careless they almost all are) many casualties they pretend arise from the unimproved state of the farm, and easily impose them as such on their employers, whereas they solely proceed from their own neglect.

To remove sheep often is an excellent temporary preventative against the rot, and most other disorders incident to them ; but to fold them dry a-nights is still more infallible ; that is, to keep them from rain ; but the largeness of the flocks in Ireland, most people imagine, is an absolute bar against this salutary expedient.

This is an ill-founded surmise. If they would divide their stock into smaller proportions, that is, to limit their sheep-walks to one or two hundred acres at most, under the care of one man ; to allow to these proportions (the land being, we'll suppose, of no more than a middling good sort) three sheep *per* acre in summer, and one and a half in winter, in the rearing or breeding way ; and to erect on every such farm proportionable shelter-houses to a south, or south-by-east aspect, (but never to the north or west, the winds blowing, especially from the latter point, too long and cold) there would not be one-third of the annual dearth of sheep there is ; and in this computation I fancy the proportion is exceeded.

Those who hold very extensive tracts, may say this simple expedient is not practicable ; but it certainly is, both to the considerable and inconsiderable farmer, even in parts where timber is not easily had, which seems to be the chief difficulty. Suppose now (to give a very feasible hint) a house made of turf (if no stone or brick could be conveniently had) 100 feet long, about fourteen wide, and the wall about five feet high, with four large doors or openings to the aspects before mentioned ; slight and cheap timber girthing,

girling, easily carried from afar, would do for this business as well as the best; the thatch, whether straw out of the barn, or stubble*, which last is far the best, we know, is of trifling value in those parts, and ought to be well sowed on with ropes, which makes it effectually resist stormy weather; and the erecting the wall of turf, or, which is much better, with clay-mortar, well mixed with straw-rubbish, we also know, cannot cost much, where labour is but from a groat to sixpence a day.

In short, I could erect one of these houses in this manner on every hundred acres, which is the quantity of land that ought to be allowed to each, for fifteen pounds, Irish money, or, at most, twenty. The land, spoiled by digging off the sods, would be soon restored by the treading of the sheep. The hay-yard, of course, to be adjoining this house.

All the objection I think can be made is, the not being able to move these houses, thereby to ameliorate different spots of the farm, as they do in Switzerland their wooden houses that run on wheels.

Conveniencies in countries are different: in Switzerland there is plenty of wood; in many parts of Ireland the length and difficulty of carriage renders a sufficiency of it for this purpose impossible to be had: besides, moving houses, for aught I know, may do well in Switzerland, or in England; but such as I mention would answer extremely well in Ireland.

In this way I am sensible the winter-mucking would be almost always on one spot; but it would make much dung,
which

* Wheat-stubble, which in Ireland is left in the ground from twelve to eighteen inches long, is the very best of all sorts of thatch; surpasses the oat-stubble, the sedge, or long lowland spiry grass, common straw, palmetto leaf, or any other in use: it is best sowed on with pitched twine, or rope-yarn, and will hold very well without repair ten or a dozen, or more years, unless carried away by over-violent storms or hurricanes. In Ireland it resists the western monsoons exceeding well, and they most commonly, every season, blow a stout gale. But where pitched twine cannot be conveniently had, ropes made of new hay, or even of straw doubled, will answer the end sufficiently. I have had a considerable deal of thatching done for me with great success in this way. IR.

which might be removed to great advantage; and if it had not, is it not evident that it would be much more beneficial to lose the night-mucking, during the three or four most inclement months of the year, than treble the worth of it of one's flock? Moreover, I am not clear, but the dung being preserved from the frost would go farther than if scattered by the sheep about the land in hard weather: and, though it is much the custom to turn out dung in that season, I am certain, (and many physical causes will demonstrate it) the sooner afterwards it is mixed with the land, the more of its virtue it will retain.

But before I quit the article of sheep: as I said before, countries and circumstances differ; for though I don't approve of extensive uninclosed pastures in Ireland, it seems in Spain they do well enough: the flocks there are small, as in France; but they have a right of commonage in that country, perhaps not in any other civilised one that we know of.

There it is a constant practice with the shepherds, soon after shearing time, to set out with their flocks, generally consisting of about an hundred each, and to pass from one province to another, feeding them promiscuously both on ley and corn lands*, the meadows and some other particular enclosed lands, as parks belonging to the nobility, and *clergy especially* only excepted.

These itinerant shepherds often travel three and four hundred miles from their habitation with their small flock: they sometimes take part of their family, a good deal of provisions, a tent, and some well-trained dogs, and are never stopped if they keep their sheep on the open lands, and often don't return home till after lambing-time.

They generally have one-third, or half the profit of the flock for their hire.

By

* The sheep in France and Spain (and likewise the larger cattle) will go through the corn lands, and never touch the corn: I have been witness of this truth, and would have been the more surprised at it, had I not known how they are trained to their manner of feeding. IR.

By this it would seem, extensive pastures are not improper for sheep : but we are to presume, as the staple is of so little consequence in Spain, that they have more losses there in this way, by bad management, or want of knowledge, than we have in the northern countries ; for perhaps the too-intense heat of the sun (which commonly destroys the best pastures) has a worse effect on this quadruped in Spain, than the too-great abundance of different herbs and moisture has in Ireland.

I am, GENTLEMEN,

London,
Feb. 17, 1764.

Your very obedient servant,

JOHN IRWIN.

NUMBER CV.

A Letter to the Editors, proposing the cultivating of Hemp and Flax in our American Colonies, for the Consumption of England, &c.

GENTLEMEN,

HAVING lately seen and admired the plan of the *Museum Rusticum et Commerciale*, I beg leave to offer you my thoughts on a subject of importance, which relates equally to trade and agriculture. That I may be as brief as possible, I shall begin with some general positions that will hardly be denied.

First, That hemp and flax are necessary articles to a commercial and maritime state.

Secondly, That hemp, in particular, is necessary for the support of a naval power.

Thirdly, That a nation like ours, supported by its navy, would always be secure of adequate supply of hemp both in peace or war.

Fourthly, That we cannot be sure of this supply as long as we depend on the imports from Russia, or from any country independent of ourselves.

If

If these positions are granted, we must either encourage a home cultivation, or import it from our North-American colonies.

The first of these has been often tried, and has been found, by experience, to be very inadequate to our wants, in respect of quantity; and in quality much inferior to what we import from the Baltic.

The latter project bears a more promising aspect, and the purport of this paper is to recommend it to the public by all the arguments I can suggest.

These arguments may seem indeed unnecessary, when so great a writer as Joshua Gee has enforced them, long ago, with a strength and perspicuity which all must admire, though few can imitate. However, as his reasoning has been neglected, I beg leave to revive the subject, especially as the time is come when our colonies are regarded as the true source of wealth and industry to the mother country.

But few words, are necessary to establish the fact, that hemp may be cultivated in North-America; since it is well known, that all the ships New-England built are supplied with cordage of their own growth and manufacture.

If the possibility of such a cultivation is allowed, the advantages resulting from our supplying ourselves with hemp from thence, will, I hope, be evident to every reader.

To consider, first, its effects, with respect to our colonies: as the number of industrious inhabitants is the best criterion of national strength, so no cultivation whatever can employ such numbers as this under consideration, for no article is so much wanted.

This encrease of raw materials will enable them to live more comfortably, by taking off more of our manufactures, which they now want, but are unable to pay for. They will extend their improvements farther, and be more closely connected with the mother country, as every ship that is built in these kingdoms will proportionably assist the colonies. Besides, it should be considered that this cultivation will not interfere with any other branch of the North American trade; for the same labourers may cultivate and prepare both

hemp and tobacco, the times are so different; and the same may be said in respect to the silk manufacture of Georgia.

The advantages resulting to Great-Britain are equally clear.

First, We shall be sure of an adequate supply, both in peace and war, as we shall import from a country depending on us for support.

Secondly, We shall purchase it with our own manufactures; and as the demand encreases for hemp, so their demand for our manufactures will be encreased in proportion, and each country will thereby mutually encourage industry in the other.

Thirdly, We shall prevent the North Americans from running into manufactures themselves, which their wants may force them to, unless we supply them with the means of cultivating more raw materials.

Fourthly, We shall save the annual expence of near 400,000 *l.* in specie, which we send to Russia for this article.

These are the principal advantages; all which are evident to every reader, and, if rightly considered, of the greatest consequence; for having just finished a long, dangerous, and expensive war, in which our navy was our chief support, and having greatly enlarged our territories in North-America, we may, by encouraging this cultivation, save a large annual expence, support our colonies, have a sure supply for our navy, and encrease our home manufactures.

One objection only can be made; that the hemp in North-America is of a worse quality than that from the Baltic, because the cordage of New-England vessels is more apt to snap and break than what is worked from Russian hemp.

This objection should not hinder the trial, as it may be justly apprehended, that the bad qualities of North-American cordage arise rather from bad manufacturers than from any natural defect in the plant.

It must be confessed, the encouragement of so large a branch of manufacture is an object of great extent, and only fit for the legislature, or some considerable society of public

lic-spirited men, who by joint aids may be enabled to offer large premiums for a present encouragement.

The legislature did endeavour to introduce the American hemp by three temporary acts of parliament, which are now expired.

The first in king William's reign, which was revived under queen Anne: the second act expired under George I. and was immediately revived: the third act, if I mistake not, expired in 1743, when the nation was deeply engaged in war, and when the American colonies were less considered than ever; for which reasons it was not revived.

As I have not the power of recommending it to the government, I beg leave to propose it, through the channel of your collection, to the society for the encouragement of arts, manufactures and commerce, who have already undertaken several projects as extensive as what I am now laying before you.

The object is certainly large; but if it be gradually and judiciously pursued, the success is very probable; and if it succeeds, the advantages are evidently great.

If I may offer my private sentiments, the only likely method of succeeding is to begin with some previous steps.

To offer a premium directly for the largest quantity of American hemp, equal in goodness to what comes from the Baltic, would be only discrediting the scheme in its outset; for if the cultivation is ill managed, it is impossible the first specimen should answer; and artful men may lay hold of the failure to cast a damp on the whole project.

We should begin with instructing them in the properest method of cultivating and preparing that commodity for manufacture; which may be done by offering a good premium *for the best treatise on the cultivation and preparation of hemp.*

If such a treatise can be properly dispersed, and some planter induced to settle in North-America, who is well versed in the process, I am inclined to hope, that in some few years they may adopt the improved method.

Then,

Then, and not till then, can we reasonably expect the English traders to prefer the American to the Russian hemp; and, though the undertaking will be slow in its progress, it is better to proceed on sure grounds, by slow degrees, than to hazard the success of the whole by a precipitate conduct.

These are my general reasons: to have enlarged on minute particulars, would have swelled this letter to an improper size. I should now conclude, but there is another article of manufacture, flax, which hitherto I have but just mentioned, though of almost equal importance with hemp.

The only reason of my silence was, that I was loth to discourage the Irish, who are now engaged in that cultivation; yet as the Irish flax is employed in their own manufactures only, I should think no prejudice could arise to them from encouraging the growth in North-America, for the consumption of England and Scotland.

Besides the general arguments, applicable to every commodity, of saving a very large annual expence, promoting the cultivation of more raw materials, and the consequential encrease of our own manufactures, I shall offer some particular reasons, which only relate to this commodity.

It is well known, that all our colonies are, both in soil and climate, proper for the growth of flax; and as our territories are very extensive, we may hope for flax of different degrees of fineness; from Georgia and Carolina, equal to the flax of Ægypt or Syria; and a stronger, but not less useful sort, from our more northern provinces.

It is likewise certain, that the plants are by nature equal to any in the known world; for the American flax-seed is as much esteemed in Ireland as that from the Baltic: and if these reasons are added to the foregoing general arguments, I submit it to the gentlemen of the Society of arts, &c. whether another premium should not be offered for the best treatise *on the soil and cultivation proper for flax, with the best method of preparing it for manufacture*; subjoining this query, whether the Irish would be losers should the scheme succeed, as they might improve their linen ma-

nufacture by importing flax of a better quality, from America, than any they can produce from their own soil.

I submit this paper, Gentlemen, to your perusal, hoping, if it is printed in your *Museum*, it may of course find its way to the Society of arts, &c. who alone are capable of carrying so extensive a scheme into execution*.

I am, GENTLEMEN,

With the truest respect, yours, &c. &c.

Feb. 11, 1764.

S. R.

P. S. On reading over this letter I find several inaccuracies in the matter, and many more in the style, which I submit to your correction: I shall only excuse the first by saying, I endeavoured to be right, and I believe my general reasoning is so; and, as for the latter, I think it no reflection to have it said, that I was more attentive to the matter than the style.

NUMBER CVI.

A Letter from Mr. B. Rocque, of Walham-Green, to the Rev. Mr. Kellett, of Yarmouth, on the Culture of Burnet †.

S I R,

YOUR six acres of land, upon which you have turneps, will do incomparably well for burnet: as soon as your turneps are cleared off, plow your ground, for the first time, the same depth it was plowed for the turneps; we will suppose this to be in March: about the middle of May trench-plow it; that is to say, the plow must go over the same place twice; which is to break the staple of the ground, and to facilitate the growth of the burnet-root. I

know

* This gentleman's future correspondence will do us honour, and will, we imagine, besides be of considerable benefit to the public. E.

† The editors cannot enough acknowledge their obligations to Mr. Rocque, for the favour of communicating the above piece. E.

know no grafs whose roots grow fo quick in the ground as that: I have found roots of it, which had been fown in Auguft, to be between two and three feet long in the month of March following.

Burnet does not make a tap-root, like faintfoin, or lucern, but makes feveral tap-roots: in the middle of June you muft trench-plow it again, as you have done in May; but be aware not to trench it deeper than the firft trenching, for fear of bringing up dead foil; which if you did, it would be a long time before your plants would take a good hold of the ground.

Harrow and roll your land well after the laft trenching; then fow your twelve pounds of feed *per* acre; and after fowing, harrow it again with a light harrow, for fear it fhould be buried too deep: then roll it, and let it lie till the month of Auguft; then, if you find your ground is very weedy, harrow it backwards and forwards, inftead of hoeing it; and be under no apprehenfion for your burnet, for it runs too deep in the ground to receive any hurt: but in cafe the harrow fhould leave any weeds, they muft be either hoed, or weeded by hand.

As you can fow it but in June, I would not advife you, though it will be very rank in Auguft, to feed or cut it till January or February; then you may go on feeding it till the firft of May.

My reason for not feeding or cutting it fooner is, that all graffes that grow fo faft fend themfelves too much while they are young: as all other graffes are plenty at that time of the year, you may preferve your burnet till you have no other grafs, as you will feed it till the firft of May: you muft let it grow afterwards till you fee the feed ripens, which will be about the middle of June; then reap or mow it, and thresh it, as I faid *, between wet and dry, if you want to preferve the feed. After it is threshed, dry it thoroughly, then put it where you will; and as to the chaff,
dry

* See pages 295, 296, 306, 308, where the culture of burnet is treated of by Mr. Rocque in feveral letters formerly communicated to us by him. E.

dry that likewise well, and keep it in a very dry place; for I look upon it to be as good as bran or pollard for cattle: it is also my opinion, that when you feed cattle with burnet-hay, little or no corn will be wanting; for I have fed a horse upon burnet straw and chaff only, ever since the sixteenth of August; and all who have seen him admire him for the firmness of his flesh and his good look.

I forgot to mention that burnet is always green, even when the seed is ripe: no dry weather stops it, for I have seen fennel perish by it, and it remained always green and thriving.

I shall take particular care to send you the seed against your ground will be ready; for I have had such demands for it, I have none at present: that will be about the middle of June; and you will find you will be almost as forward as if you had sown it in April.

If you have horses which have the grease, or any humour, turn them upon your burnet, even the first year, in August. I have cured one, they reckoned incurable, of the grease by that means; but observe, it is only the first crop has that effect.

I am,

Walham-Green,
Feb. 16, 1764.

Your's, &c.

B. ROCQUE.

NUMBER CVII.

A Letter to the Editors, from Mr. Holdway, on the Culture of Saintfoin in Wiltshire.

GENTLEMEN,

IF I understand you right, you would now and then be glad to have a letter or two from a practical farmer: such have I been for many years.

In this sentiment I intend to bestow an hour of my time on your work. I am an old man: if therefore my style and hand-

hand-writing should not be of the best, you must e'en excuse it, or correct it as you please.

About one hundred years ago the culture of saintfoin * was first introduced into Wiltshire, and was soon preferred to clover grass; and there was indeed some reason for this preference, for it thrives much better, and yields a much larger encrease, on poor hungry soils, than clover can do.

Another very good reason may be assigned why saintfoin was so well received. The sowing it at all was considered as a new husbandry, and the timorous farmers were very unwilling to hazard the trial of any new method on lands which would any other way yield them any considerable advantage: it was chiefly in corners of fields, of very little use to the farmer, that this pasture was first tried, and that on poor land, as should it not have succeeded, the only loss would have been the seed; yet many occupiers of land would not, at first, hazard even this trifling loss.

But the sentiments of these farmers were soon altered in this matter: clover wears out in a few years, whereas many, who sowed saintfoin on poor land not worth above six shillings an acre, found their land so much improved, as to be very speedily worth thirty shillings the acre, and at the end of twenty years it continued yet in good proof.

In fact, it will thrive, and be a very considerable improvement, on the poorest, and seemingly the barrenest land; but it must be remembered, that sheer and slight sands, and all clays, and other cold and wet soils, are to be excepted; on rich land the weeds soon destroy it. Besides, as it sends its roots very deep in search of nourishment, the longer it occupies the land, the more good it does it; whereas this is far from being the case with shallow-rooting plants.

A saintfoin ley may at any time be broke up, when it will be sure to yield several good crops of corn, and may
after-

* For the various methods of cultivating saintfoin, recommended by our correspondents, see No. VIII. page 36. No. XXII. page 108.

afterwards again with good success be sown with saintfoin; and one principal reason why it thrives so well on poor lands must be the length of the roots, by which it is enabled to resist the parching heat of the sun better than most other grasses are.

One thing I must notify, which is, that I am by long experience convinced that the land cannot be made too fine for saintfoin; it thrives the better for it, and is the more certain to take.

I have often, with very good success, sown it with oats and barley in the manner clover is sown, the proportion much about equal to the grain it is sown with; for as the seed of saintfoin is much larger and lighter than clover seed, of course a larger quantity should be sown: it is much best for the plants to come up thick; the ground is thereby sooner stocked, and the weeds are easier kept under.

Some in this county have sown it in rows with intervals, to afford a better opportunity of destroying the weeds; and I have heard that on tolerable rich land, apt to produce weeds, it has done very well in this way; but as I never experienced it, I shall not enlarge on that head.

It is best not to feed it the first year; but whether it is sown by itself, or with any other crop, it may be mowed the first year.

It is much best, if a good crop is desired, and if it is to continue any time on the land, to sow it in autumn by itself, the earlier the better: the proper season is from the beginning of August to the end of September; but if you mix it with other grain, let it be sown from the beginning of February to the end of March; the earlier in either season, the better.

I have, I think, before observed, that the land cannot be made too fine for this plant; and it should be well harrowed before sowing, and again harrowed afterwards to cover the seed.

I must once more repeat, that it must not be fed the first year; for the sweetness of the grass will cause the cattle to bite it too near the ground, which will greatly injure your crop: in fact, it is our practice not to let great cattle feed it
till

till the third year, particularly in grounds that are inclinable to moisture; for the roots are tender, and much treading is very injurious to it.

When the ground is well covered, suppose in the third year after sowing, if you intend to mow your saintfoin, it is best to lay it up by the middle of April at farthest; but it is better done three or four weeks sooner. The time for cutting it is when it begins to flower, as it is then fullest of sap: this will sometimes be about the middle of May, but often later, according as the spring is cold or warm.

In feeding it some necessary rules are to be observed. In the spring turn in your great cattle, and you may be pretty certain the buds will not be cropped too near. Oxen thrive well on it, without the danger, at their first grazing, that is to be apprehended from clover, &c. yet even this danger chiefly arises from the negligence or ignorance of the hinds.

In the autumn, and part of the winter, you may feed your sheep on it, which, if in health, will thereby be very suddenly fattened.

Saintfoin hay is excellent food for horses, and they are uncommonly fond of it.

If you turn your cows in spring in your saintfoin hay, you will find it will breed in them abundance of milk; and all my acquaintance know that the butter made of it is excellent.

When it is intended to save the seed of saintfoin, it is best to roll it in the spring, that the stones may be pressed down, and the scythe go close to the ground; or else the best seeds, which grow on the lowermost joints, will be lost.

When land is inclined to moisture, saintfoin may thrive very well on it till a wet winter comes; but it is then a great chance if it is not destroyed.

In this county it has long been the opinion of the ablest farmers, that it is best not to dung our saintfoin; for the dung serves only to encourage weeds, and seldom reaches

deep enough to give any supply of nourishment to the roots of the saintfoin.

I have, if I mistake not, before observed, that the treading of great cattle, particularly in winter, is hurtful to this grass: I would therefore by no means advise the farmer to fodder his cattle on it, as the field will thereby be poached full of holes, in which the wet lodging, it is a chance but the roots of the saintfoin are rotted by it.

I have often fed my sheep in winter with saintfoin hay; but whenever I intended this, I always cut my saintfoin some little time before it flowered: it is very easy to observe when the flower cup is forming: the sheep will eat it very clean, and thrive well on it, provided it is not old and sticky.

When I say that sheep in autumn will fatten very suddenly on saintfoin grass, it must be observed, that I did not mean the aftermath of such as had been mowed that season; but the second growth, when the field had been for some time shut up after the great cattle had fed it in the spring. The aftermath is, it is true, good for sheep; but, I think, not quite so good as the aftermath of natural grass; at least, this I am certain of, that turn some sheep into a field where there is a mixture of natural grass and saintfoin, both of which have been mowed, they will to chuse eat up the first, before they touch the other with any degree of appetite.

Saintfoin shoots very early in the spring, and to nip it in the bud is very injurious; I would therefore advise that the sheep be taken out about Christmas, soon after which time it often begins to grow.

Some of our Wiltshire farmers have had a custom of sowing their saintfoin seed under furrow; but I do not much approve of this practice, though they say in light land it cannot be buried. I am,

GENTLEMEN,

Your humble servant,

A. HOLDWAY.

Marlborough,
February 2, 1764.

N U M-

NUMBER CVIII.

Explanation of the Table annexed.

IN an engraved table annexed, communicated to this work by a very ingenious and public-spirited gentleman, may be seen all the different measures by which quantities of land are calculated; and how often one is contained in another, either in long or square measure; and this by the plainest, easiest, and most intelligible method.

Having found the two titles, the eye is to be directed in a straight line till the two lines meet in one center: in one way it discovers the number of the lesser measure in the greater, in long measure; in the other way, in square measure: thus, for example,

In a *mile* long there are 1760 *yards*.

In a *mile* square there are 3,097,600 square *yards*.

Nothing can be more simple than this method, as must be very apparent from the slightest attention to the plate; and it cannot fail being very useful in the admeasurement of land, as it will serve by way of artificial memory, and greatly abridge the calculations.

NUMBER CIX.

A Letter from a Member of the Society of Arts to the Editors, recommending the Chichling Vetch for Cultivation, as an artificial Pasture.

GENTLEMEN,

I See with pleasure the number of premiums granted by the society for the culture of plants for artificial pastures: the importance of this object is very well known by every one in the least acquainted with the modern methods of agriculture: in fact, the greater the variety of plants raised

for this use, of so much the more service will it be to the community, as every different kind of soil may then be suited.

This consideration it is has induced me to trouble you with this letter, hoping some acting member of the society will propose a premium on the subject in some future meeting.

I might, it is true, have mentioned this myself in the society, but I think this way of communicating it to the members most eligible, as I have hitherto been only a *bearer*, and hate *long speeches*.

But to come to the point: I could wish to see a handsome reward offered by the society for encouraging the culture of the *broad-leaved chickling vetch*, the *lathyrus latifolius*, C. B. p. 344. and in the Hort. Cliff. is entitled, *lathyrus pedunculis multifloris, cirrhis diphyllis, foliolis lanceolatis, internodis membranaceis*. The gardeners call it the *common everlasting pea*.

This plant is a perennial, grows naturally in some parts of England, is easily cultivated, and the root yields every year a great burden of excellent provender.

These are great inducements for encouraging the culture of it; and particularly as, from the experience I have had of it, I have reason to think it will grow in almost any soil.

I observed, I had some experience in this matter: part of this experience I shall now communicate for the benefit of your readers.

I sowed, three years ago, a rood of land, light, and but poor in quality, with this seed: this work was done early in the spring, the land being prepared as for barley.

I sowed it not in the broad-cast way, as I should have found much more difficulty to keep down the weeds; but I caused a slight furrow to be drawn the length of the land with a light plow; and when the seed was thinly sown, or rather dropped into this, another was drawn at a foot distance, in which the seed was dropped in like manner.

An interval, or fallow space, was then left at least two feet wide; then two more rows of the vetches; till the whole

whole land was sown. I must observe, that I covered the seed by means of a light harrow with wooden tines, drawn backward and forward *across* the land.

When the plants came up, I had them well hoed, to clear the ground of weeds; and when they grew a little strong, they were set out with the hoe to about a foot distance in the rows, that they might have room to spread and branch.

The first year they yielded no great quantity of fodder, but they have since made me ample amends.

The second spring they came up very strong and vigorous, branching out much; and when I turned a couple of horses in to feed, they were very fond of it, eating it very greedily, though they were taken out of a good, natural upland pasture.

This last summer the land was almost entirely covered, and it yielded a great deal of feed indeed: for experiment sake I caused a few rods to be mowed just before it flowered, and it made good hay, sweet, without being sticky.

I think, Gentlemen, from my little experience in the matter, I have some foundation for recommending this plant to the notice of the public: I could wish, indeed, I had been more accurate in my experiment; but what is past cannot be recalled; and some other of your correspondents may, perhaps, hereafter give the public more useful information on this head.

The above is not the only chickling vetch that is worth cultivating; there is one with a purple flower, which would very well repay the pains the farmer should be at in sowing it: this is the *lathyrus sativus flore purpureo*, C. B. p. 344. and in some countries is cultivated for the sake of its seeds, which serve to feed poultry, pigeons, &c. and are no despicable feed for horses instead of oats: it grows wild in Italy, but will thrive very well in England; and the stalks and leaves make, as I am informed, good fodder green or dry. It should seem, by this, to be worth trying; particularly as it will grow on almost any soil, and requires but little cultivation, not more than is in general bestowed on tares: it may be sown broad-cast, as it does not

rise very high; and if sown pretty thick, it will go near to keep down the weeds.

I will not pretend to say that these plants possess all the advantages *burnet* can boast of, which is, I see, so strongly recommended in your collection by Mr. Rocque, of Waltham-Green; yet in some particular cases it may be more advantageous to the farmer to cultivate the chichling vetch than the burnet, as I am apt to think the last is more nice with respect to the choice of soil; but this matter may be better decided some years hence, when the chichling vetch has been tried by experiments made with a greater degree of accuracy and precision than mine were: the truth of the matter is, that at the time I made the experiment I had no great leisure, and little expected I should ever have either inclination, or a proper opportunity, of publishing my thoughts to the world; neither should I have done it at present but that your work offered itself so *à propos*.

I must, before I conclude, observe to you, that when I had cut a few rods of the first-mentioned sort of chichling vetch, to make into hay, a small quantity of it was, by accident, spread thin on the ground, so as to receive the full action of the sun's rays: this was, in a manner, spoiled, becoming quite dry, insipid and brittle, and almost all the leaves dropping off; but the remaining part, which was dried either in small cocks, or thick swarths, made excellent hay: by this I am persuaded, that the last method is by much the best *.

I am, GENTLEMEN,

Bath, Your very humble servant and admirer,
Feb. 1, 1764. CLERICUS.

* Many farmers chuse to make even their meadow-hay, letting it always lie in what they call grass-cocks, turned every day with a fork at one motion; they think this the safest way, as, in case of rain, the hay takes less damage. E.

NUMBER CX.

A Letter to the Editors, recommending the Propagation of Saxifrage in our Meadow Lands.

GENTLEMEN,

AS the genius of agriculture seems at this time to have risen from a long slumber, and my countrymen are in earnest endeavouring to bring about a reformation in the methods hitherto practised in the works of husbandry, permit me to supply a hint at least towards this salutary end.

It has long appeared to me matter of surprise, that grasses should have been, till lately, thought unmeriting of culture. Our meadows have been most shamefully neglected; many, very many, are, even now, over-run with coarse, rank, and noxious grass, weeds, rushes, &c. &c. did the fault lie in the land, the farmer would not be so much to blame; but experience has long ago convinced me, that even the sourest meadows may with proper care be cured, in a great measure, if not entirely, and almost doubled in point of annual value.

It is strange that people should be so very fearful of plowing up a meadow: though they see it over-run with weeds and trash, which unprofitably impoverish and exhaust the soil, they avoid the means of remedying the evil; they are apprehensive of spoiling their turf, and imagine that the longer the land has been laid down, the sweeter and more nourishing is the little *grafs* it yields.

For my part, I can see no reason why we should not *cultivate* and encourage the growth of particular plants in our meadows, as well as in our fields in tillage. When we know of grasses which are every way adapted to the soil of meadows and low grounds, why should we not, in reason, rather sow in a regular way such grasses there, than trust to the spontaneous produce of the soil, if I may be allowed so to term it?

Every

Every farmer knows which sort of grafs he would wish to have predominant in his meadows : it would surely be very easy for him to save some of the seeds of such grafs, and propagate it a-part till he had saved sufficient to sow, suppose an acre of land, with it pure and unmixed : when arrived at this point, he might propagate it as extensively as he thought proper.

I must not however forget the chief intended subject of my letter, which is, to recommend to your readers the *saxifrage* as a plant proper to be intermixed with the grafs of their meadows.

I have now in my holding above thirty acres of meadow land, which fortunately for me bear a grafs that needs no improvement ; though this I in part attribute to my having drained my land properly some years ago, since which the bite is much improved.

Amongst this grafs in my meadows there grows a considerable quantity of *saxifrage* ; which, in the opinion of all the dairy-men in my neighbourhood, is the reason my cheese is so particularly good.

Now, Gentlemen, I should imagine that when a farmer has plowed up a foul meadow, and intends sowing it with good grafs seed, it would be no difficult matter to procure a sprinkling of *saxifrage*-seed to mix with it : this would certainly be of service ; and we should not despise this excellent plant, because it is common and not far-fetched : there is great plenty of it in the Netherlands, in their finest cow-pastures ; and that I have often heard assigned as a reason for their having such quantities of cheese of a superior quality ; though I must at the same time own, I have in London tasted some Dutch cheese, stuffed full of cloves, which was not the best in the world ; but this might have been an accident, for they say their cheese is in general excellent.

But, to return to my immediate subject, I would by all means recommend the propagation of the *saxifrage* plant in meadows, not only on account of its great use in improving the quality of cheese, and butter also, which it does ;
but

but because it is a native of our island, and there is no danger of its succeeding to the farmer's wish; which cannot be said of every plant recommended for cultivation.

But it must be remembered, that I do not recommend it to be cultivated alone; I never tried it in that manner: that it will thrive very well when mixed with good meadow grass, daily experience convinces me; and this method it is I urge.

I should be glad if some of your ingenious correspondents, of which you seem to have many, would inform me what is the best kind of grass to sow in a field I have, the soil of which is quite a thin coat of very light loam over a deep bed of hard gravel*. I want to lay this field down in pasture, it being so convenient, as lying near my house; and I should be glad to be informed in what manner I can do it to the best advantage. I should have observed, that the little soil there is over the bed of gravel is in good heart.

It must, I am sensible, be some plant that will strike deep into the gravel, which will thrive here; for should it not do so, a few weeks hot dry weather, in summer, would burn it up, and entirely destroy the yield of it.

Excuse this trouble, as it was intended partly to give, and partly to receive instruction; for with old *Chaucer*, *Gladly would I learn, and gladly teach*. With every assurance of approbation of your collection, I beg leave to conclude, that I am

Your most obedient servant,

Lancaster,

And constant reader,

Jan. 30, 1764.

E. L.

* We should have been glad if our correspondent had informed us how thin the upper coat of earth is, and what is the nature of the under-stratum of gravel. E.

NUMBER CXI.

A Letter to the Editors, on the Uses to which Beech Mast is applied in Hertfordshire, &c.

GENTLEMEN,

OUR pork, in this country, is far from being the worst that England affords; yet are our pigs fed for months together on beech mast only, owing to the great number of beech trees which grow in a manner spontaneously in the county of Hertford.

When the mast happens to be plentiful, which is, perhaps, three years out of seven or eight, we turn out our hogs to feed on it about the middle of October, and sometimes rather sooner.

On this food they thrive to a wonder, insomuch that many porkers are killed in a year, fatted on beech mast alone, and which generally turn out fine meat: however, when a hog is intended to be killed for pickling, it is much the better way to take him up, and give either pollard, barley meal, or peas, for a month or five weeks, when he will be fit for the tub.

This article is of very great service to the poor, as an indigent labouring man is thereby enabled, with very little help of other food, to kill two or three pigs, which shall, when pickled, support his family the greatest part of the year, and without which help he must fare poorly indeed.

Yet, after all, there are some disadvantages attending it, which must be carefully guarded against, or the loss will be great; and, in fact, the same disadvantages attend feeding hogs with acorns.

The inconvenience I mean is, that hogs are apt, without great care, to get the *garget* when they live on this food. To prevent this, the best way is to moisten some peas or beans with water, and sprinkle over it some antimony pounded and sifted; and this should be repeated every other

day for a fortnight, or three weeks, and it will effectually preserve them from the disorder.

Many poor men will gather acorns, in the season, in large quantities, in order to give them to their hogs to bring them forward in their flesh. These acorns must not, however, be given to them in the state in which they are gathered; if they are, the hogs will certainly get the garget: they require preparation; but to do this is no great trouble.

Dig a hole in the ground in a warm place, large enough to contain several bushels of acorns: in this let the acorns be put, and well moistened with water in which a handful or two of common salt has been dissolved: in a few days they will begin to heat and spire; observe them, therefore, attentively, and when they have made a shoot about three inches long, take them out of the hole, and spread them to dry on a barn-floor, and in a day or two they will be fit to give to your hogs*: but this matter must also be managed with care and caution; they must not have too many given them at a time, at first; twice a day is often enough to feed them with the acorns for a day or two; afterwards three times a day: whilst they eat this food, they are never to be confined in a sty, but suffered to run at large; for if they are too much abridged in their liberty, they never thrive well, or grow fat, on acorns.

It is no uncommon thing, with the management above directed, and the assistance of a little wash, and a few grains now and then, for a farmer to kill several hogs in a season, which shall weigh from eight to ten score, and sometimes even more.

These hogs make very good meat; but it is not, I own, so fine as when the hogs are taken up, and have each of them four or five bushels of peas or barley-meal given to complete their fattening before they are killed.

3 P 2

Most

* This method of preparing acorns, in some measure, resembles the process used in malting grain; and its intention must, we think, be to bring the acorns to a more perfect state of maturity, and thereby correct the crude, and perhaps unwholesome juices with which they abound when they are first brushed, or fall from the trees. R.

Most farmers are fond of the old breed of large English hogs; but for my part, after many experiments made, and many trials respecting the profit of keeping either sort, I own, I prefer the bastard Portugal breed, as they are much easier kept in good case, and are, I think, better nurses than the common English swine.

Another reason I have for preferring the sort above mentioned, which is, that when I have a parcel of young pigs in winter, I find these sows will fat them better, and make them sooner fit for sale than the others; and this, where a man keeps a number of swine, is an object worth regarding.

I find also, that this foreign breed is to be fatted with less food in proportion than ours: after a day or two they seem to bear confinement better, and eat, drink, and sleep, without much fretting or whining.

Before I conclude, I must beg leave yet to make one observation more, which is, that I constantly find that the cleaner my hogs are kept when they are put up to fatten, the better they thrive. I thought it necessary to mention this, because many are of opinion, that by being left to wallow in their dung, they grow fat the faster: this is a great error; for I think I may venture to say, that a hog in a sty loves cleanliness; at least, from all the observation I have been able to make on this animal, if they can be said to love dirt, it is any dirt but their own.

I could enlarge more on this subject, which I have studied much: but as I might possibly occupy a space in your collection, which may more usefully be filled by some of your able correspondents, I shall for this time forbear.

Though I am modest enough to think you have many more able correspondents than myself, yet I am vain enough to hope this will find a place in your next publication. Believe me,

GENTLEMEN,

Hertford,
Feb. 6, 1764.

Your assured friend,

S. T.

NUM-

NUMBER CXII.

To the Editors of the MUSEUM RUSTICUM.

GENTLEMEN,

AS I imagine, from what has already appeared of your public-spirited design, that it is calculated to bring improvements of every kind, that have the least connection with husbandry, to light, and to introduce them to the notice of those who can receive any advantage from them, I take the liberty of sending you the enclosed sketches of carriages constructed for the uses of agriculture; and if any vacant place should be spared me by your more useful correspondents, shall beg you to let them appear in your instructive collection.

I have seen something resembling one of the carriages in a French book: the others are, I imagine, entirely new.

As I am but a very indifferent draughtsman, I hope the inaccuracy of the drawings will be excused; particularly, as, from the evident abilities of your engraver, I am convinced they can be easily corrected by him.

Fig. 1. plate IV. is a wheelbarrow, in which a broad wheel, three feet diameter, is placed at A, and covered over with a box.

B, the wheel, lying between the two extremes, if the weight is placed equally on each side of it, preserves the barrow in equilibrio, and requires no labour but to push it forwards; whereas, in the common barrows, half the weight is to be supported by the labourer.

Fig. 2. is a barrow of another construction: A is a large cylinder, like those with which gravel-walks are rolled. It may be made of cast iron, as the common rollers, or of wood.

BB, two buckets, which are to carry the burden, equally divided between them. The sides, CC, of the two buckets, slide out, so as to let the burdens fall out, by successively lowering the two extremes.

This

This has the advantage of the former barrow, and avoids marking the grass or gravel over which it rolls; an inconvenience that attends all the machines of this kind now in use. It serves also for a roller, and is particularly serviceable in making gravel-walks. From the figure it appears, that a cart might be made upon the same principle, which might serve to roll land, but would be of most service in the making artificial levels, &c. in gentlemen's improvements.

Fig. 3. is a cart for hay: the wheels ten feet high, and ten inches broad: the axle, A, longer than is common, and passing through the body of the cart, to prevent its being liable to overturn, and to make the shafts on a level with the horses' breasts.

It is peculiarly adapted to carry hay, as by its breadth it will spread that hay which in other carts they are obliged to pile up so high as to endanger the carriage and its horses.

In the former part of this letter I made an apology for the inaccuracy of the annexed drawings: I must beg leave to renew it, as upon looking over them, I perceive them to be very imperfect.

I have models making of wheels of various diameters and breadths, with proper carriages, to ascertain, by experiments, the proper mean in both these points, *viz.* their length and breadth, so as to give the greatest power, and at the same time avoid the danger of oversetting, attendant on high wheels; and the weight gathered by very broad wheels in a stiff soil.

I shall also endeavour to find out the most proper point on which the bulk of the weight should be placed in four-wheeled carriages, as I have observed, that when the weight is thrown a great way behind the hindmost wheels, the carriage moves with more ease.

If the result of these experiments should suit your design, I shall think myself happy in communicating them to your society*.

I am, GENTLEMEN,
Your admiring reader,
R. L. E.

Oxford,
Jan. 29, 1764.

* This gentleman has already laid us under a great obligation, and he will double it by continuing his favors. R.

NUMBER CXIII.

A Letter to the Editors, from Mr. Bellas, of Yattendon, Berks, containing an Improvement on the Waggon.

— *Levi certamine superantur.*

GENTLEMEN,

I Take this method of conveying to the public an improvement upon the waggon *.

Having observed the bad consequences of turning short with a heavy load, viz. broken wheels, thills, traces, &c. &c. I was inclined to be at some little expence of thought, in order, if possible, to guard against them.

This I have done by two chains, about two feet in length each, to be fixed at one end by a pin about three quarters of an inch diameter; through the fore bed, about one foot behind the upper pillow, and key'd; the other through the under pillow, by a pin about one foot in length, and a nut, to screw it to what length may be necessary: (see plate IV. fig. 4. and 5.) these chains, on each side one, to hang loose when the waggon is drawn in a right line; but upon the turn to check it just before it locks. Thus guarded, the wheels will be at liberty to perform their office, but without it you are subject to all the inconveniencies above mentioned.

Mechanical improvements in theory are frequently clogged, either with some difficulty in the execution, or expence, which over-balances the advantages proposed; but this is not subject to either, as I have applied it to my waggon, and it was executed by a common blacksmith for four shillings. The sketch sent herewith (see plate IV.) may perhaps make it more intelligible. I am

Yattendon, Berks,
Jan. 21, 1764.

Your constant reader,
GEORGE BELLAS,

Fig.

* We are greatly obliged to Mr. Bellas for this favour, and shall set a proper value on his future communications. E.

Fig. 4. is a Berkshire waggon with the check-chains fixed; the upper spokes of the fore wheel being omitted, in order to discover the position of the check-chain, and the manner of fixing it.

Fig. 5. is the check-chain more at large: at the end, *a*, is the iron pin and key; at *d* may be seen the iron, with the screw and nut, by which it is fastened to the under pillow: the dimensions are as follow; from *a* to *b* measures six inches; from *b* to *c*, being the length of the chain, two feet; from *c* to *d* twelve inches.

N. B. The two check-chains, together, may weigh about eleven or twelve pounds.

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